



FAKULTÄT FÜR INFORMATIK
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Diplomarbeit in Wirtschaftsinformatik

**From “Anytime, Anywhere” to “Here and Now”:
Place and Time Restrictions in Mobile Narratives to
Enhance Situated Engagement of Mobile Users**

**Von „Überall und Jederzeit“ zu „Hier und Jetzt“:
Orts- und Zeitbeschränkungen für mobile digitale
Geschichten als Mittel zur besseren Integration von
Handynutzern**

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Abstract

The usage of the mobile Internet has increased tremendously within the last couple of years, and thereby the vision of accessing information anytime, anywhere has become more realistic and a dominant design principle for providing content. However, this study challenges this paradigm of unlimited and unrestricted access, and explores the question whether constraints and restrictions can positively influence the motivation and enticement of mobile users to engage with location-specific content. Restrictions, such as a particular time or location that gives a user access to content, may be used to foster participation and engagement, as well as to support content production and to enhance the user’s experience.

In order to explore this, a *Mobile Narrative* and a *Narrative Map* have been created. For the former, the access to individual chapters of the story was restricted. Authors can specify constraints, such as a location or time, which need to be met by the reader if they want to read the story. This concept allows creative writers of the story to exploit the fact that the reader’s context is known, by intensifying the user experience and integrating this knowledge into the writing process. The latter, the *Narrative Map*, provides users with extracts from stories or information snippets about authors at relevant locations. In both concepts, a feedback channel was also integrated, on which location, time, and size constraints were imposed.

In a user-centred design process involving authors and potential readers, those concepts have been implemented, followed by an evaluation comprising four user studies. The results show that restrictions and constraints can indeed lead to more enticing and engaging user experiences, and restricted contribution opportunities can lead to a higher motivation to participate as well as to an improved quality of submissions. These findings are relevant for future developments in the area of mobile narratives and creative writing, as well as for common mobile services that aim for enticing user experiences.

Keywords:

Restrictions, Constraints, Mobile Media, Locative Media, Placed-based Community Engagement, Mobile Interaction, Urban Informatics.

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Table of Abbreviations

3G	Third Generation (Standards for wireless communications defined by the International Telecommunication Union; includes among other things UMTS and WiMAX).
A-GPS	Assisted Global Positioning System
API	Application Programming Interface
CLMS	Cooroy Lower Mill Site (user study)
EITO	European Information Technology Observatory
GPS	Global Positioning System
HCI	Human-Computer Interaction
HSDPA	High Speed Downlink Packet Access
JDO	Java Data Objects
JDOQL	Java Data Objects Query Language
JPA	Java Persistence API
KGUV	Kelvin Grove Urban Village
KGUV I	Kelvin Grove Urban Village (first user study)
KGUV II	Kelvin Grove Urban Village (second user study)
LBS	Location-Based Services
MIS	Mobile Information System
NFC	Near Field Communication
PDA	Personal Digital Assistant
PVT	Position, Velocity, Time (Information provided by the GPS system)
QUT	Queensland University of Technology
SDK	Software Development Kit
SQL	Structure Query Language
TAMM	Technology Acceptance Model for Mobile services
TTFF	Time To First Fix
WLAN	Wireless Local Area Network
WELM	West End Literary Map (user study)

1 Introduction

In various areas such as committees, urban planning, and community governance, people's engagement and participation is important in order to elicit feedback and share ownership, and often an individual's contribution is crucial for the success of services or projects. For instance, Web 2.0 services often heavily rely on the participation and engagement of their users, as many of them are largely based on user-generated content. Individual production, user-generated content, and participation are key ideas and concepts of the Web 2.0 paradigm (Andersen 2007; O'Reilly 2005). These services have to overcome the chicken-and-egg dilemma. In order to attract users, a web service usually needs to provide valuable content. But services that rely on user-generated content first have to attract users in order to generate this valuable content. Therefore, it is essential to motivate and incentivize users to participate and contribute. Web sites like Wikipedia¹ would be worthless if there were no users composing and reviewing articles. Further examples are sites or services such as Facebook², YouTube³, and Blogger.com⁴, which only exist because users frequently create and share personal content. These examples are within the top ten of the Alexa ranking (Alexa Internet Inc. 2009), which demonstrates that people actually use these services a lot and that these sites are not a marginal phenomenon.

Another area where people's participation is essential is in the field of community and civic engagement. Community engagement usually means that government and citizens work and deliberate collaboratively on issues that affect them or their environment (Cavaye 2004, 85-102; Queensland Department of Emergency Services 2001). People get the opportunity to influence government decisions, and contribute to shape the area they live in according to their wishes. However, participation is a necessity. Without those citizens who are willing to invest time and effort, the concept of integrating citizens in the decision-making processes is useless. Furthermore, the goal should be to include as many citizens as possible. Otherwise, the decisions made might only reflect the opinion of a minority, which could result in solutions that do not actually benefit the community as a whole.

However, many people do not actively take part in the process of community engagement. Either they are not very interested and basically do not want to invest their time in it, or they simply lack the time to contribute. Likewise, only a small fragment of Web 2.0 users actively produce content, whereas the majority only use these services passively without contributing (Busemann/Gscheidle 2009, 356-364; Trump/Klingler/Gerhards 2007). This is especially remarkable, as technological innovation reduces barriers that may hinder people to participate. People do not have to physically leave their home to comment and discuss new ideas by the government, as they can easily do it online. Web 2.0 services make contributing

¹ <http://www.wikipedia.org/>

² <http://www.facebook.com/>

³ <http://www.youtube.com>

⁴ <http://www.blogger.com/>

as easy as possible; uploading personal content typically requires no more than a few clicks. This phenomenon of passive consumption is likely to be equally pronounced in the mobile area, if not more. Mobile usability still has a lot of room for improvement. In his usability studies, Nielsen found that the rate of successfully completing a given task using the mobile Internet was only 59%, mainly due to small screens, limited input possibilities, download delays, and badly designed sites (Nielsen 2009). Thus, it is likely that people are also not willing to spend their time generating and contributing their own content, but rather prefer to read existing content while on the go.

Another negative factor is a trend of mobile computing that aims at providing any data *anytime, anywhere* (Billsus et al. 2002, 34-38; Kleinrock 1996, 351-357; Perry et al. 2001, 323-347). This paradigm is about tearing down barriers and restrictions in order to offer content whenever and wherever the users request it. Therefore, as people are able to access and submit information *anywhere* and *anytime*, chances are high that they do not feel urged to do it immediately but rather postpone it, and as a consequence often forget or fail to do it later on. Thus, novel mechanisms to encourage mobile phone users to participate are timely and significant.

Being positioned at the intersection of people, place and technology, this study combines aspects of mobile human computer interaction (HCI), urban informatics and community engagement, as well as creative writing. It explores the ways in which the motivation and enticement of mobile users can be fostered, and examines possibilities to increase engagement and participation. In contrast to the *anytime, anywhere* paradigm, the concept is to restrict and constrain the possibility to access as well as to submit information. Information that is only available at a certain time and at a certain place might be more exciting and engaging than static information that could be accessed all the time. For this purpose, a *Mobile Narrative* was created, i.e. a mobile reading application that, among other things, requires readers to be at the locations where the story takes place in order to be able read the individual chapter. Further details of the concept will be presented in the following section. The goal of this study is to explore how restrictions and constraints can be used to foster place-based community engagement. It delivers design guidelines for employing those mechanisms for mobile information access as well as mobile information contribution, and thereby seeks to improve the quality of generated user content as well as the quality of the user experience.

1.1 Aims and Background

The technical capabilities in the area of mobile communications have increased at a remarkable rate in recent years. Widely spread third generation (3G) mobile technologies already provide broadband Internet connection, and further developments such as High Speed Downlink Packet Access (HSDPA), often referred to as enhanced 3G, provide data rates that top 14 Mb/s and have therefore become comparable with stationary Internet access (GSM Association 2009). Moreover, sophisticated multimedia phones have emerged equipped with large displays, intuitive user interfaces, and broadband functionality, such as 3G or wireless local area network (WLAN). In combination with the provision of affordable data plans for broadband access by network operators, this has led to a tremendous increase in mobile Internet usage within recent years. In some countries, such as Japan, the mobile Internet is already now more popular than the traditional Internet (Ishii 2004, 43-58), but also in Europe

customers with sophisticated mobile phones start using the mobile web on a daily basis (Comscore.com 2009).

With this development, the vision of accessing any content at any time from anywhere became more realistic and has evolved into one of the main design paradigms of mobile HCI. Much research has been conducted to tackle and overcome the technological challenges for this provision and to gain user acceptance of unlimited information access (Billsus et al. 2002, 34-38; Kleinrock 1996, 351-357; Perry et al. 2001, 323-347). This *anytime, anywhere* paradigm is about tearing down barriers and restrictions in order to offer content whenever and wherever users request it.

However, this pursuit of providing unlimited access to anything at anytime may not be the only desirable way. Limitations are not always objectionable, but may indeed have positive effects as well. Consumers that, for instance, have to choose between two similar products might opt for the scarcer one, because its scarcity makes it more unique and special compared to the other product. In Brock's commodity theory (Brock 1968, 243-275), the psychological effects of scarcity are explored, and it is stated that "any commodity will be valued to the extent that it is unavailable". Lynn (1992, 67-78) extends this theory and explains the "scarcity's enhancement of desirability" by people's naïve economic theories. People believe scarce products to be "expensive, of high quality and/or good investments" (Lynn 1992, 67-78), especially if the limited availability was caused by market conditions (Verhallen/Robben 1994, 315-331). Furthermore, in several studies (Jeffrey Inman/Peter/Raghubir 1997, 68-79) it was shown that restrictions, such as purchase quantity limits, purchase preconditions, and time limits, could positively effect the consumer decision and increase the probability that the restricted product would be chosen.

In this study, the idea of enhancement of desirability through limitations or restrictions was borrowed and expanded to mobile services in order to explore whether it is also beneficial for the offered services and the user experience. Information that is only available at a certain time and at a certain place might be more exciting and engaging than static information that could be accessed all the time. Furthermore, putting a limit on content contribution, such as allowing users to only submit their own generated content as long as they are at a certain place or only within a limited time frame, would entice people to participate on the spot rather than to delay their decision to engage. In contrast, following the *anytime, anywhere* paradigm, there would be no urgent need to do this, and the submission of user-generated content could be postponed over and over again. Further, with the emergence of mobile handsets with Global Positioning System (GPS) integration, the realization and implementation of these constraints become more reasonable. GPS has been adopted to the main handset vendors' portfolios, and its penetration in the smartphone sector is expected to be between 65% and 70% in Europe and Asia/Pacific, or even up to 90% in North America (Milanesi et al. 2009). Therefore, localizing and determining the user's position will soon be a mainstream feature, and thus can then be exploited for enhancing the user experience as presented in this study.

The aim of this study is to examine if and how constraints and restrictions can positively influence the motivation and enticement of mobile users, and whether they can be used as a mechanism to foster participation and engagement, as well as to enhance the user experience. The focus of this work lies on information, entertainment and community applications for

private use. As for applications to enterprise settings, further research work will be necessary to determine different requirements and expectations.

As mentioned in the previous section, a *Mobile Narrative* was created. The concept was motivated by *The 21 steps* of Charles Cumming (2008), where the reader is able to follow and understand the local course of the plot on an interactive map visualization (see Figure 1-1). However, in the developed *Mobile Narrative*, this concept is turned ‘upside down’. Instead of displaying the location of a story on a map, the story unfolds its chapters only when the reader is at the location where the action takes place. As soon as the reader approaches the location that is associated with the chapter, this chapter can be read on a mobile phone in situ.

In order to explore this concept, two iPhone applications were developed: one *Mobile Narrative* application and one *Narrative Map* application. Both applications are intended for literary tourists, or in general for people interested in “experiencing literature”. The

former guides the reader along a predetermined trail and, each time the reader reaches a defined point of interest, the next chapter is released. Thereby, the reader experiences the story at the very locations where the story takes place. The latter, the *Narrative Map* application, presents literary information at various points of interest, such as an author’s house/birthplace/etc., or places and locations mentioned in books or stories. The reader, for instance, reads about an author and his works while standing in front of the house where the author spent most of his life.

Both applications also have a feedback channel, so that the reader could also comment or submit personal content. This functionality was extended and several different restrictions were introduced. One essential part was restricting the access of information by place and time, so that readers had to be on the spot where the story takes place in order to be able to read the chapter and/or they had to read it at certain specified times (the time the story line happens to be). Furthermore, constraints with regard to the user’s contribution were explored, such as restricting the location from where people could contribute, the time when they could submit their content, as well as the size of their submission. In four user studies at different sites, the applications and the integrated constraints were tested, and the feedback of users was collected. The outcomes of these studies show how constraints can be used in mobile services in order to increase participation and motivation of users on the go.



Figure 1-1. Screenshot of *The 21 Steps* (Source: Cumming (2008))

1.2 Research Questions and Objectives

Ubiquitous computing is a rising trend and is sometimes seen as the “IT revolution of the 21st century” (Spaccapietra/Al-Jadir/Yu 2005, 6-13). Weiser described with this term his vision of computers that are seamlessly integrated into the world, indistinguishable and invisibly “enhancing the world that already exists” (Weiser 1999, 3-11). Similar ideas have been coined with terms such as “pervasive computing”, “ambient intelligence”, or “everyware” (Greenfield 2006; Hansmann et al. 2003). However, Helal et al. (1999) understand it as an umbrella term for nomadic and mobile computing, and thereby accentuate the fact that mobile computing is an important domain in this area. Even though the understanding of the term varies slightly, the challenges and aims are similar. New ways and concepts for information dissemination need to be found, mostly with regard to personalized and contextualized content (Spaccapietra/Al-Jadir/Yu 2005, 6-13). Instead of simply displaying all the content that is available to the user, the content is normally filtered and adapted to the user’s actual context or their personal preferences. The remaining content is usually still accessible, but is hidden unless the user requests additional information. In that way, the user is prevented from being overloaded with information that is irrelevant or inappropriate in most cases.

This concept is taken one step further in this study. Instead of only adapting the displayed content and hiding irrelevant information, the access to information is truly restricted. Content is only available in a certain context (for instance, at a certain time), and cannot be retrieved if the user’s context is not consistent with it. The same method is applied for the submission of user-generated content. The idea behind this is that these restrictions may influence the motivation and enticement of mobile users, as this might result in a “hunt” for information. Users are not able to access or submit content *anytime, anywhere*, but have to actively adapt their context so that it complies with the required constraints. Since users cannot immediately consume the desired media, but have to wait until the conditions are met, there is a chance for rising excitement and pleasant anticipation. This could lead to an experience similar to a treasure hunt with joyful feeling when the information is finally retrieved. Furthermore, users are already engaging with the content before they are accessing it which, in the end, results in a longer and more intense overall engagement.

Another possible impact of the introduction of restrictions could be an altered perception of the places people engage with. Bassoli et al. (2007, 39-45; 2008) observed and studied the usage of their urban music-exchange application and found that the binding of content to a place led to a deepened relationship between the media and the place it is located, and to an increase of “people’s awareness of their surroundings”. With the integration of location and time constraints for content, a similar effect could be observed. Users that access information about a place while they are in situ could increase the awareness and thereby the engagement with the place they reside. Likewise, being forced to go to a certain spot at a specified time could enable people to experience a place at a time they usually never are at this location.

This study explores the effects and implications of restrictions on the motivation of mobile users. Two kinds of constraints are introduced: (1) constraints regarding the access of information; and (2) constraints regarding the submission of user-generated content. For the first group, location and time constraints are tested; that is, content is only available at specified times or places. In addition to time and location restrictions, for the second group restrictions concerning the size of the content are examined as well, such as limiting the

amount of characters allowed for text input. Within this framework, this study explores the question whether and how these restrictions influence the motivation and enticement of mobile users. Moreover, the results of this study should give an indication of how restrictions should be designed in order to foster participation and engagement. In order to answer these questions, several subtopics need to be addressed:

- *Is the anytime, anywhere paradigm, which is currently widely followed in the mobile web environment, the only desirable concept for engaging people? Or do areas exist in which restrictions and limitations concerning the access of information intensify the enticement and rather motivate users to engage instead of actually restricting them?*
- *Do restrictions and limitations influence the motivation of users to participate and contribute self-generated content?*
- *In which application areas is an unrestricted and unlimited access more sensible, and in which areas are restrictions useful?*
- *How can restrictions for mobile applications be designed in order to attain an acceptable and engaging experience?*

In order to examine these research questions, several user studies were conducted. Three case study sites were selected (see Figure 1-2): Kelvin Grove Urban Village (KGUV), Cooroy Lower Mill Site, and West End, Queensland.

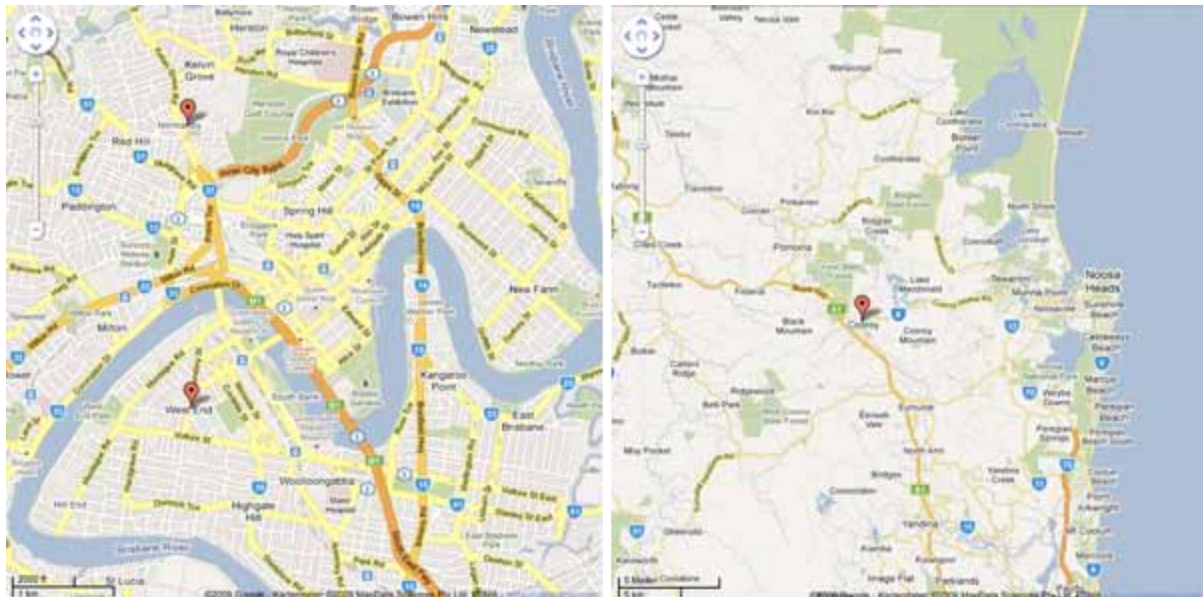


Figure 1-2. (a) Brisbane based case studies in Kelvin Grove and West End (b) Cooroy based case study

Kelvin Grove Urban Village is a master-planned inner-city community in Brisbane, Australia, with a focus on sustainable, mixed-use urban development. It is a 16-hectare area, located two kilometres from the central business district, and built on former army barracks. This development project was initiated by the Department of Housing and Queensland University of Technology, and offers more than 1,000 residential units, ranging from affordable student

and low-income accommodation up to luxury high-end apartments (State of Queensland - Department of Communities 2009; State of Queensland - Department of Communities/Queensland University of Technology 2009).

Cooroy Lower Mill Site was formerly the area of Queensland's largest hardwood mill, and has now been redesigned into a landmark civic precinct with historical, cultural, and educational facilities. The vision of the site is to attract organizations focused on "Design for Living" activities, and four precincts are planned to be created: (1) Creative and Learning; (2) Design for Living Centre; (3) Design for Living Enterprises; (4) Greenbelt (Sunshine Coast Regional Council 2009). The Lower Mill Site is located in Cooroy, a town situated in the northern Sunshine Coast hinterland in Queensland, Australia.

West End is an inner-city suburb of Brisbane, Australia, located about two kilometres southwest from Brisbane's central business district. West End is a revitalized suburb with a variety of cafés, bars, and restaurants. It is also known for its designer boutiques and shopping, as well as for its range of specialty stores. Furthermore, West End is also located close to several cultural attractions, such as the Queensland State Library, Queensland Performing Arts Centre, Gallery of Modern Art, Performing Arts Complex, and Queensland Museum.

1.3 Significance

The mobile market is still rapidly growing. Within the last six years the number of mobile

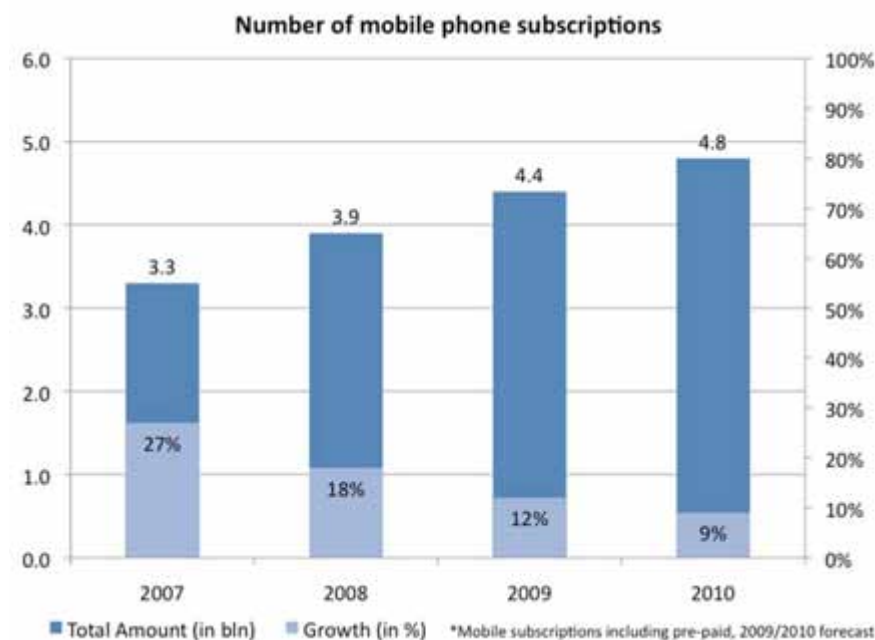


Figure 1-3. Number of mobile phone subscriptions worldwide (Adopted from EITO (2009))

phone subscriptions globally increased by 3.1 billion to a total estimated amount of 4.1 billion cell phone subscriptions by the end of 2008 (ITFacts 2009). In 2009, 4.4 billion mobile phone users are expected worldwide (see Figure 1-3), which means that two thirds of the world population use a mobile phone. A further 400 million users are predicted by the end of 2010 (EITO2009). Running

parallel to the growth of the market is the technical evolution, as more and more sophisticated mobile phones have emerged. Handsets have evolved into powerful multimedia devices with large displays, intuitive user interfaces, and broadband functionality, such as 3G or WLAN. Mobile network operators already provide suitable 3G technologies and infrastructure, as well as affordable data plans for mobile broadband access. Accordingly, there has been a

tremendous increase in mobile Internet usage within the last few years. In Japan, there are already more people accessing the Internet via a mobile phone than via a stationary personal computer (Ishii 2004, 43-58), and more than 80% of the mobile phone subscribers in France, Germany, and the UK with new devices like the iPhone browse the mobile web regularly (Comscore.com 2008a). In Germany, the amount of mobile phone users that use their handset to access web content doubled within one year to 7.7 million, and now every fifth Internet user also surfs the web on his mobile device (mobiles-internet123.de 2009). A similar increase could also be seen in the U.S.: around 35% (22.4 million) of mobile phone users accessed the mobile Internet on a daily basis in 2009. In 2008, only 10.8 million did so every day (Comscore.com 2009).

However, mobile computing still faces several challenges (Satyanarayanan 1996, 1-7), such as unreliable connectivity and a finite energy source, and mobile phones are likely to remain less powerful than their stationary and static counterparts. Moreover, challenging interfaces and limited screen sizes, in combination with the fact that users are “on-the-go”, leads to a different usage pattern when accessing the Internet via a mobile phone than via a computer or laptop. The usage behaviour of mobile phone users, for instance, is typically described as an “information hunt” since users often simply want to quickly look up some information (Weiss 2002). All this constrains the participation and engagement. Even without the barriers of mobile interfaces, only a small fragment of Web 2.0 users actively produce content, while the majority only use these services passively without contributing (Busemann/Gscheidle 2009, 356-364; Trump/Klingler/Gerhards 2007). A similar behaviour can be observed in the mobile Internet field: only a minority of users visit or use Web 2.0 services with their mobile phone (Comscore.com 2008b; TNS Infratest 2008).

This is, however, expected to change. Jaokar and Fish also predict for mobile services a “two way flow” (Jaokar/Fish 2006); that is, users will not use mobile services for merely consuming information, but actively produce and upload content as well. They will become mobile *producers* that “engage with content interchangeable in consumptive and productive modes” (Bruns/Jacobs 2006). A large amount of the user-generated content is usually produced for social networking sites or blogs, which has been one of the fastest growing categories of mobile user activities. In the U.S., the amount of daily users in this area increased by 427% within one year (Comscore.com 2009), which could be an indicator that the proportion of *producers* of the mobile users could soon rise notably.

Particularly for mobile Web 2.0 services and applications, a high participation is crucial and thus it is important to find ways for an efficient integration of mobile media and encourage users to contribute and produce such media. Furthermore, effecting a higher and more active engagement with mobile media will also have a positive influence on the user’s experience, and thus is relevant for all kinds of mobile services. In order to reach this aim of enhanced user experiences, this study therefore explores ways and mechanisms to foster motivation and engagement by using restrictions and constraints in order to inform the design of engaging mobile services.

1.4 Innovation

This study explores the effects of restrictions and constraints on the basis of a *Mobile Narrative*. Few studies about both mobile and location-based stories have so far been published. Paay et al. (2008) for instance describe a system for location-based storytelling, while Correia et al. (2005, 102-109) present a platform for mobile storytelling. However, most of the systems focus on the adventurous experience for the users. Kjeldskov and Pay (2007, 15-20) present several metaphors for fictional guides: Treasure hunts, Jig-saw puzzles, Dominos, Scrabble, and Collecting butterflies. These metaphors are usually found in current mobile stories, and all take fun or gaming activities as a basis.

The *Mobile Narrative* developed in this project is not a simple location-based story, but also allows specifying additional time restrictions. Furthermore, this study focuses more on the literary aspects and explores the novel aspect that allows creative writers to have more control over where and when their stories are read, and what impact that has on the creative writing process, as well as on the perception and quality of the reading experience. Apart from that, the usage of restrictions and constraints were not limited to the information access, i.e. the retrieval of the story, but they were also integrated into the act of submitting user-generated content. With this in mind, the present study attempts to achieve three levels of engagement: (1) writers have to engage with the landscape or city in the writing process; (2) readers are able to engage with their surroundings while reading; (3) readers are motivated to submit own content and engage through participation.

Thus, this study provides beneficial insights for mobile fiction and valuable findings for developers of mobile fiction application. Moreover, it contributes to the creative writing field by exploring a novel concept for the provision of literature, and the implications for authors and readers. It also includes future benefits for authors, since the established feedback channel should supply authors with helpful knowledge about their readers. The study also highlights new and innovative application areas for the *Mobile Narrative* concept, such as community or civic engagement. It shows a way in which these kind of stories could be exploited to engage users in civic planning processes.

Unlike this first aspect, which will be of interest only for the broader creative writing community, the contribution of this study goes beyond the rather limited scope of mobile fiction. This work challenges the *anytime, anywhere* paradigm, and explores the opposing way of employing restrictions and constraints for accessing and contributing information. The effects found in the conducted studies and the extracted findings contribute several design implications for general mobile services. The outcomes of this study are relevant for developers and providers of mobile services and researchers in the field of human-computer interaction. It proposes an alternative way of providing information, which aims to create enticing user experiences. Apart from that, it shows ways to foster motivation and participation. Thereby, this work offers valuable innovation for two further groups. Developers and researches that aim to create engaging experiences in mobile services are given an exemplary implementation of the *here and now* concept, and thereby are provided with an overview of positive effects as well as possible problems, which should support them by deploying restricted and constrained information. Developers and researchers who are focused on participation in mobile services, for instance for Mobile Web 2.0 services or community engagement, gain insights in fostering motivation by utilizing restrictions and

constraints. This study also highlights the design implications. Necessary requirements and guidelines that need be to considered in order to successfully incorporate restrictions in mobile services are stated. Also, several different restrictions are presented, with details about possible implementations and resulting benefits for each of those.

1.5 Structure

The thesis is structured as follows:

Section 1 introduces the subject and the background, as well as the research questions and objectives. Furthermore, the significance of the problem and the innovative contribution of this study are highlighted.

In section 2, research projects and previous work in areas related to the study are presented, and scope and position of this work is defined.

Section 3 describes the approach and methodology applied for this study. For each selected method, setup and purpose are outlined.

In section 4, the results of each method are presented and findings are discussed. Subsequently, resulting implications for mobile narratives and mobile services are highlighted.

Section 5 gives a technical overview of the prototypes developed for this study. It therefore provides insights into the implementation of the two developed systems. For both systems, it describes the architecture, the mobile application, as well as the server-side deployment.

Finally, in section 6 we summarize our results and findings, and point out possible interesting areas for further investigation.

2 Literature Review

This interdisciplinary study combines aspects of four different areas and disciplines (see Figure 2-1): *Mobile Information Systems (MIS)*, *Urban Informatics*, *Creative Writing*, and *Commodity Theory*. At the intersection of these areas, a *Mobile Narrative* was created and the effects of introducing restrictions and constraints were explored. The work was strongly influenced and informed by each of these disciplines, but just as well contributes and impacts these individual areas.



Figure 2-1. The disciplines combined in this interdisciplinary study
(Illustration by author)

The achievements and developments in the field of mobile information systems are enabler and problem at the same time. Without the advance of mobile technology and the sophistication of mobile interaction, projects like the present one would not be possible. However, interaction methods are still limited compared with non-mobile devices, and thus still arouse various problems. The often unpleasant input mechanisms contributed to the idea of using restrictions in order to foster motivation, and the contributions in this field are the results of possible design mechanisms for mobile services. However, the actual concept of employing restrictions and constraints in order to increase interest has been adopted from the commodity theory (Brock 1968, 243-275), a theory from social psychology that explores the effects of scarcity. Previous work in the area of Urban Informatics and Creative Writing was the inspiration for the developed application, as it showed new and innovative ways of engaging and entertaining users. In return, this study makes a contribution to these disciplines, as it presents new ways of community or civic engagement, and also explores the effects for authors and readers of this concept.

The following sections provide an overview of previous research in the above-mentioned areas. As the individual disciplines are overlapping to some extent, some of the following sections will include research work and projects from the intersecting areas and cannot be separated accurately. First, section 2.1 provides an overview of relevant research in the area of mobile information systems. At first, specifics and challenges of the mobile Internet are discussed, followed by a review of Web 2.0 trends and their implications on the mobile Internet, as well as context-aware mobile information systems. Second, section 2.2 gives an overview of previous projects in the field of Urban Informatics that relate to real world interaction, urban media and entertainment. Third, section 2.3 highlights various innovative literature or creative writing projects related to mobile technology or new media. Fourth, section 2.4 adumbrates the theory behind the usage of restrictions, and provides an overview of social psychology work related to the valuation of scarcity. To conclude this literature review, in section 2.5 the scope of this study is defined and its position in relation to the described disciplines is emphasized.

2.1 Mobile Information Systems

Mobile Computing is a research field which is dedicated to the communication of mobile users, as well as mobile devices and related applications (Roth 2002, 1f.). Since mobile computing introduces new challenges and problems, it also directly affects related information systems (Pitoura/Bhargava 1994, 371-378). These information systems adapted for mobile environments are called wireless or mobile information systems. Katz (2002, 102-114) uses the notion of wireless information systems as “computing systems that provide the ability to compute, communicate, and collaborate at any time”. Pernici (2006, 4) defines mobile information systems as “information systems in which access to information resources and services is gained through end-user terminals, that are easily movable in space, operable no matter what the location, and, typically, provide with wireless connection”. Important for the context of this study is the clarification of the notion of “mobile devices”. There are different shades of mobility and portability of computing devices, and thereby this term is ambiguous. Weiss (2002, 2-4) describes this in his “personal computing continuum” (see Figure 2-2). The continuum ranges from stationary, non-portable devices to handhelds, which

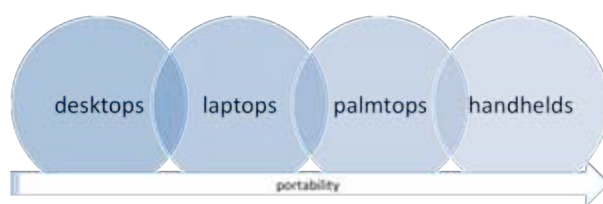


Figure 2-2. Personal Computing Continuum (Adopted from Weiss (2002))

are used anywhere and while held in hand. But also laptops and palmtops provide portability, and thus could be considered as mobile devices. However, in this study the notion of mobile devices is used for the group that Weiss (2002, 4) identifies as handheld devices, including mobile phones, PDAs, and pagers.

Mobile devices and communication are some of the main enablers for this project. The advance of technology and improvements regarding usability issues facilitate the development of applications, such as the ones developed for this study. However, even though it provides a broad range of new possibilities, there are also a lot of challenges that still need to be faced, especially in the area of mobile Internet. These issues are addressed in the first subsection. Subsequently, the mobile Web 2.0, an adapted broadening of the Web 2.0

for mobile users, is reviewed. This is interesting for this context as user-generated content and participation are the main pillars of Web 2.0 (Andersen 2007; O'Reilly 2005), but need to be tailored to the needs of mobile users, which is one of the problems investigated by this work. The focus of the last section lies on mobile guides and context-aware systems, which technically are very close to the *Mobile Narrative* of this study, and therefore are obviously relevant.

2.1.1 Mobile and Ubiquitous Connectivity

In recent years, the mobile Internet usage increased strongly (cf. section 1.3). Within one year, the amount of mobile phone users accessing the mobile Internet doubled in Germany (mobiles-internet123.de 2009), and in the U.S. the users accessing it on a daily basis more than tripled in the same period (Comscore.com 2009). Countries like Japan are technological leaders in the field of mobile phone technology, and there the penetration of mobile Internet usage even exceeds that of stationary Internet usage (Ishii 2004, 43-58). However, despite this tremendous advance in technology, the mobile Internet and its usage is notably different from general Internet use. Much research has been done in this area especially from the technical perspective, pointing out the main challenges of this medium and how to overcome them. Satyanarayanan (1996, 1-7) outlines several characteristics, including the fact that even though mobile devices are becoming more and more sophisticated, they will stay “resource-poor” compared to static or stationary devices. Further, he states that mobile devices are more likely to get stolen, lost, or damaged, as they are used on the go and in insecure environments. Moreover, the Internet connection is rather unreliable and varies greatly, and mobile devices are dependent on and have a limited, i.e. finite, energy source.

Additionally, Francis (1997) also points out that mobile devices generally have small keyboards and small screens, and that mobile computing usually results in “reduced connection speed and increased connection cost” (Francis 1997). Even though Satyanarayanan and Francis at that time both only focused on laptops and portable computers, and not really on mobile phones, the emerging problems are similar. In a more recent work, Chae and Kim (2003, 240-247) analyze the differences within the mobile Internet, and explore the effects and business implications of these differences on e-commerce. The authors describe three main characteristics: mobile Internet devices are usually used or experienced as more personal, they provide instant connection, and mobile Internet systems generally provide a lower level of resources. In order to cope with these problems and characteristics, mobile systems cannot simply be seen and designed as stationary systems, but they need to be adapted. By putting more focus on exploiting local resources and reducing communication, unreliable connectivity can, for instance, be eclipsed (Satyanarayanan 1996, 1-7). The combination of the described challenges and the fact that users are “on-the-go” when accessing the Internet via their mobile phone also leads to a significantly different usage pattern, compared to the Internet usage via computer or laptop.

One decisive difference is the fact that the reasons for accessing the Internet are different. In contrast to extensive web browsing at desktop computers, the Internet gateway on mobile devices is usually used for quickly looking up information or instant communication. Mobile devices “require fast access to information, while desktop computers require comprehensive access” (Weiss 2002, 3-6). However, the method of using the Internet is also notably different (Weiss 2002, 16-18). For instance, bookmarking is used more extensively, and

username/password combinations are often stored on the device for convenience reasons. Furthermore, mobile phone users are rather “hunting” for information and usually expecting to obtain the desired information easily, in contrast to the surfing behaviour of general desktop users. Ishii (2004, 43-58) compares mobile Internet usage with that of “time-enhancing home appliances such as the telephone” in contrast to the stationary Internet use, which itself is compared to the “time-displacing technology of TV”. Furthermore, people also tend to use different methods of communication for different addressees. For instance, e-mails composed on mobile phones are predominantly exchanged with closely related people, such as friends or family, whereas for communication with business colleagues e-mails are mainly exchanged using a stationary device (Ishii 2004, 43-58).

This study addresses two of the mentioned aspects. It tries to overcome the problems of burdensome input methods by motivating users. Some restrictions only allow users to submit potential contributions via their phone, so they only have the choice between contributing now with their mobile phone or never doing it. Other restrictions, such as the character limitation, aim to make the mobile user’s life easier by only expecting short submissions. Another aspect addressed in this work is the “information hunt” behaviour. The presented *Mobile Narrative* concept tries to alter the usage and experience from an information-oriented to an engaging experience-oriented content consumption.

Further, the mobility and portability of mobile devices combined with the possibility of connecting those to the online world, regardless of location, led to the emergence of several areas of research. Roth (2002, 2-8) gives an overview of individual related fields, and specifically mentions Ubiquitous Computing, Personal Computing, Everyday Computing, Nomadic Computing, Ad hoc Networking, and Embedded Networking. Ad hoc networks are spontaneously set up transient networks at a specific location, in order to satisfy the communication needs of the moment (Perkins 2001), whereas Embedded Networking describes the idea of having networking technology embedded into personal appliances and devices in our daily life (Perkins 2001). Personal Computing (Pandya 2000) focuses on facilitating “communication with a person at any time, any place and in any form”, and on adapting the communication to the real-time needs of the users. Everyday Computing is a theme introduced by Abowd and Mynatt (2000, 29-58), that “promotes informal unstructured activities typical of much of our everyday lives”, and is characterized by “continuously present, integrative, and unobtrusive interaction”. Kleinrock (1996, 351-357) recognized in the term Nomadic Computing the fact that nowadays many people own and use portable computers and communication devices, or need access to computing devices when travelling to other locations. Helal et al. (1999) point out the difference between Nomadic and Mobile Computing: “Mobile computing [...] requires the availability of wireless network that support ‘outdoor’ mobility and handoff from one network to the next”, whereas Nomadic Computing allows no or only “limited mobility within a building facility” and at pedestrian speed. Ubiquitous Computing, sometimes seen as the “IT revolution of the 21st century” (Spaccapietra/Al-Jadir/Yu 2005, 6-13), is the vision of computers seamlessly integrated into the world, indistinguishable and invisibly “enhancing the world that already exists” (Weiser 1999, 3-11). Very similar ideas and concepts have been evolved. One of those is Pervasive Computing, where the focus lies in providing “convenient access to relevant information and applications through a new class of ubiquitous, intelligent appliances that have the ability to easily function when and where needed” (Agoston/Ueda/Nishimura 2000, 3-5), which means

access to any data at anytime, from anywhere, using any device and any network (Agoston/Ueda/Nishimura 2000, 3-5; Hansmann et al. 2003). Saha and Mukherjee (2003, 25-31) describe the goal of Pervasive Computing as a proactive “all the time everywhere” approach of providing and delivering information. A related research area is Ambient Intelligence, which is about intelligent interface embedded in objects, that seamlessly and unobtrusively respond to the presence of different individuals (Ducatel et al. 2001). It includes several research areas, such as Ubiquitous Computing, intelligent systems research, context-awareness, and social interactions of objects (Shadbolt 2003, 2-3). Everyware is a term coined by Greenfield (2006) subsuming all mentioned, to Ubiquitous Computing related terms under this “umbrella category”.

Even though the individual terms and research areas differ notably, a major trend within Mobile Computing can be identified, namely the “availability of software applications and information anywhere and anytime” (Stojmenovic 2003, 581). Due to the technological advance mentioned in the beginning of this section, the *anytime, anywhere* paradigm became more realistic and is now one of the main paradigms of mobile human-computer interaction. In order to be able to seamlessly provide this unlimited information access, several technological and usability issues and challenges need to be tackled⁵. However, there already exist systems that implement this boundless information access. For instance, Satchel (Lamming et al. 2000, 322-352), a document system for mobile workers, facilitates easy, timely, and ubiquitous access in conjunction with an appropriate user interface. Sometimes the *anytime, anywhere* paradigm is expanded by the dimension of *anyhow*. Services that apply to this group do not only provide a location and time independent information access, but do this also “with personalized interaction in a multichannel modality” (Pernici 2006, 3).

In general, the *anytime, anywhere* paradigm is about tearing down barriers and restrictions in order to offer content whenever and wherever users request it. However, there are also approaches that go in the opposite direction. Spaccapietra, Al-Jadir and Yu (2005, 6-13), for instance, formed the notion of *Somebody, Sometime, Somewhere, Something*, which describes a paradigm that delivers specific information (*something*) to specific users (*somebody*) at a specific time (*sometime*), and within a defined area (*somewhere*). Examples of this paradigm are broadcast-based services that disseminate information to all devices within a certain area. A further example that is slightly turning away from the *anytime, anywhere* paradigm is the location-based service. The term location-based services (LBS) describes “services that integrate a mobile device’s location or position with other information so as to provide added value to a user” (Schiller/Voisard 2004, 10). Even though LBS usually help users by only displaying information that matches their position, generally any information can be retrieved if needed. This paradigm shift from the *anytime, anywhere* to services that incorporate the user’s situation has also been observed by de Waal (2009), and noted as a shift from “placelessness” to “situatedness”, and to services that exploit the “here-and-now” of users. This change to locative media and situated content does also affect the usage behaviour of users. Bassoli et al. (2007, 39-45; 2008) found that the binding of content to a place led to a deepened relationship of the media and the place in which it is located, and to an increase of “people’s awareness of their surroundings”. Moreover, being in situ when interacting with the

⁵ Billsus et al. (2002, 34-38), Kleinrock (1996, 351-357), Perry et. al. (2001, 323-347), Tamminen et al. (2004, 135-143)

systems allows opportunities to explore how users can interact with other users that are on the spot at the same time. Thus, it provides a chance to create communicative links, whereby a social interaction and connection is facilitated. The recent development shows that the *anytime, anywhere* paradigm is not the magic bullet for all mobile services, but that other approaches might be more appropriate. The aim of this study is to explore one of those new approaches and to show that the benefits of *anytime, anywhere* are limited. The *here and now* concept is taken one step further by applying these restrictions also on the contribution side, and by incorporating constraints that are beyond place and time.

2.1.2 Web 2.0 & Mobile Internet

There are different opinions about the term Mobile Web 2.0. Jeon and Lee (2008) identified three main perspectives: (1) the Mobile Web 2.0 is seen as the adoption of Web 2.0 applications and technology, and so combines the existing Web 2.0 with mobile aspects; (2) “Mobile 2.0” is the next-generation of mobile data service environment; (3) Mobile Web 2.0 is the next evolutionary step after the mobile Web 1.0. For this study, primarily the first perspective is relevant, since it explores how important aspects of the Web 2.0 can also be ensured in the mobile area. Many Web 2.0 services are largely based on user-generated content, and thus these services heavily rely on user participation. In the so-called Web 1.0, typically only very tech-savvy users were able to contribute and share their own generated content. New technologies were introduced to allow even less computer literate users to contribute individual content. People do not need to have any programming or coding skills, but can simply publish what they want to share via provided tools. There is no unambiguous definition for the term Web 2.0, even though several attempts were made. O’Reilly, who was involved in coining the term, listed several related principles (O’Reilly 2005): The Web As Platform; Harnessing Collective Intelligence; Data is the Next Intel Inside; End of the Software Release Cycle; Lightweight Programming Models; Software Above the Level of a Single Device; Rich User Experiences. This list itself does not really represent a good specification of the term, and so O’Reilly tried to provide a more meaningful definition in a second attempt: “Web 2.0 is the business revolution in the computer industry caused by the move to the internet as platform, and an attempt to understand the rules for success on that new platform. Chief among those rules is this: Build applications that harness network effects to get better the more people use them” (O’Reilly 2007). However, even though there is no universally accepted definition, there are ideas and concepts that are commonly acknowledged to belong to this notion, such as individual production, user-generated content, and user participation (Andersen 2007; O’Reilly 2005).

User participation is, for instance, essential for web sites like Wikipedia, a free online encyclopaedia “that anyone can edit”. Without users that compose and review articles, Wikipedia would simply not exist. On the one hand, services based on user-generated content need to provide a critical mass of content so that it becomes valuable, and therefore users need to be motivated or incentivized. On the other hand, it is also important that the content of those services is constantly updated, reviewed and refreshed, in order to keep people interested. There is a change in the usage behaviour from a consumptive mode to a mode consisting of both consumptive and productive engagement. This is described with the development of users to *producers* (Bruns/Jacobs 2006). Some popular instantiations are

Flickr⁶, a photo sharing site, YouTube, a video sharing portal, or Facebook, a social networking site. Further examples are mentioned in O'Reilly's comparison of Web 1.0 and Web 2.0 (O'Reilly 2005). In addition to mentioning present web sites or service, several concepts or activities are highlighted. For instance, the new trend of blogging, using services like Blogger.com⁷, is the Web 2.0 version of traditional personal web sites, and conventional content management systems are replaced by wiki-based systems in this new web sphere (O'Reilly 2005). In the latter, content can not only be submitted and edited by a few responsible editors, but all users can edit, review, and submit content.

A further common Web 2.0 development is the evolution from using directories and taxonomies to integrating the user in the classifying process by employing the concept of tagging (O'Reilly 2005). The usage of directories or categories usually requires trained people in order to get a sensible classification (Macgregor/McCulloch 2006, 291-300); by giving all users the possibility to share and upload content, a huge amount of data is generated that needs to be organized. Therefore it appears reasonable to include users and let them add tags that describe the shared content. This process is generally called "collaborative tagging" (Golder/Huberman 2006, 198) or "folksonomy", a combination of "folk" and "taxonomy" (Mathes 2004). The added description can then be used to navigate, filter, and search content. Popular examples that employ this technique are Flickr, Delicious⁸, and CiteULike⁹.

Another related trend is the emergence of "geotagging". Geotagging describes the process of enriching web resources, such as images, videos, or any other content, by adding geospatial context information to it (Scharl 2007, 3-14; Torniai/Battle/Cayzer 2007). The geographical information typically indicates the location at which the content was produced or is related to. Photos, for instance, can be augmented with latitude and longitude coordinates, as well as altitude and orientation of the place the photo was taken at (Torniai/Battle/Cayzer 2007). These annotations can be either added manually or through devices that can automatically recognize their locations, for instance GPS-enabled mobile devices (Scharl 2007, 3-14). Again, this added metadata can be used to classify or retrieve the content. For instance, Flickr and Zoomr¹⁰ present photos on a map view, so that it becomes immediately apparent where each picture was taken. Sometimes the term "geotagging" is also used for automatically parsing geo location from existing documents and content. Web-a-Where (Amitay et al. 2004, 273-280) is a system that autonomously tags web sites with geospatial information. However, this process is commonly called "geoparsing" or "geocoding" (Scharl 2007, 3-14). The presented *Mobile Narrative* also allows the creation of user-generated content that is bound to specific locations. In contrast to the above-mentioned services, the purpose of binding the generated content to locations is not only for better information retrieval or presentation, but to improve the experience and the quality of contributed content.

The mentioned concepts and trends of the Web 2.0 are also expected to have an impact on the mobile Internet, and will lead to the so-called "Mobile Web 2.0" (Jaokar/Fish 2006; Yamakami 2007, 886-890). The mobile Internet is not yet on the level of the "Web 1.0" in

⁶ <http://www.flickr.com>

⁷ <http://www.blogger.com/>

⁸ <http://delicious.com/>

⁹ <http://www.citeulike.org/>

¹⁰ <http://www.zoomr.com/>

regards to widespread distribution, maturity and evolution. Thus, it can still benefit from general web developments as well as movements in the Web 2.0 field. Yamakami refers to this as the “two-path evolution model of Mobile Web 2.0” (Yamakami 2007, 886-890). In order to reach this next rung in the evolutionary ladder, several approaches are suggested. Koskela et al. (2007, 41-48) propose to combine Web 2.0 concepts with context and community information in order to develop the new generation of mobile services, whereas the following three guidelines are recommended by Jaokar and Fish (2006). First, information or content needs to be captured at the “point of inspiration”. Second, the web should be extended to all portable devices and not only to mobile phones. Third, the unique features need to be considered and integrated for a successful adaptation of the Web 2.0 to the mobile domain.

The Mobile Web 2.0 is also expected to play an important role for the Web 2.0. Since the latter’s main driver is user-generated content, the Mobile Web 2.0 will evolve to being the “main medium to capture that intelligence” (Jaokar/Fish 2006). Furthermore, it is expected to boost location-based services, and will also be a driver for the mobile search domain (Jaokar/Fish 2006). Some Mobile Web 2.0 developments already exist. Koskela et al. (2007, 41-48) present a service architecture to create Mobile Web 2.0 services and mash-ups in a flexible manner. A further example for Mobile Web 2.0 services is CityFlocks (Bilandzic/Foth/Luca 2008), which uses user-generated content to provide geo-spatial information for urban environments. Sites like Facebook and Flickr already provide a mobile application for their services. Even though a lot of work exists in the area of Mobile Web 2.0, the aspect of motivating users to participate is often neglected. Restricting the contribution channel could be one way of increasing user participation, and so the findings of this project could contribute to the evolvement of the Mobile Web 2.0.

2.1.3 Mobile Guides & Context-Aware Systems

Much research has been carried out in the area of mobile guides and context-aware systems. As the usage behaviour of mobile users varies immensely, the requirements for such systems also differ. One approach to face these new challenges is adaptation and customization in order to provide easily accessible and relevant information. Three main solutions are usually followed: the improvement of mobile interaction, the personalization of delivered content, and context-aware information provision.

To improve and adapt mobile interaction, typically two aspects need to be looked at. Limited screen size and usage on-the-go require the information display to be optimized, and due to cumbersome input possibilities the input mechanisms should be embraced as well. Buchanan et al. (2001), for instance, analyzed mobile services and identified design guidelines, such as providing simple navigation and avoiding text input. Further best practice principles regarding usability and design for mobile services is presented by Uther (2002, 174-176). Nikkanen (2004, 28-41) also identifies user interface issues of mobile services, and suggests one-handed use as a crucial criteria and possible success factor. Moreover, various new and innovative ways for mobile input have been developed, such as camera-based interaction (cf. section 2.2.1), gesture-based interaction (e.g. Crossan et al. 2009), and other new input techniques, such as a dual-surface input proposed by Yang et al. (2009), a two-thumb chording technique presented by Patel, Clawson, and Starner (2009), or the integration of a phrase builder as suggested by Paek, Lee, and Thiesson (2009).

Another way to cope with the challenges of mobile use is to personalize content. Ho and Kwok (2003, 10-18) found that personalized services are highly attractive for mobile phone users. Beyond incorporating personal preferences, it is also important to pay attention to cultural differences and provide personalized output based on the user's cultural background. Zipf (2002, 329-338) provides a good example with maps that are adapted on the basis of a user profile and culture information, such as culture specific colouring. Phatak and Mulvaney (2002, 705-710) highlight the importance of predicting the user's action in order to provide user specific content, and propose user clustering and profiling. Several systems exist that aim at supporting and fostering the development of personalized services (Lankhorst et al. 2002, 1464-1471; Scherp/Boll 2004). The third approach is to build context-aware systems, and deliver only information that is related to the user's context. One sub-group of these services focuses only on location as context information, and thus is called location-aware or location-based services (Schiller/Voisard 2004, 10). Various museum, exhibition, and tourist information systems focusing on location-based or context aware information provision have been developed, such as GUIDE (Cheverst et al. 2000), Cyberguide (Abowd et al. 1997, 421-433) or Hippie (Oppermann/Specht 2000, 31-54). Mobile tourist guides (e.g. Simcock/Hillenbrand/Thomas 2003, 177-183), generally focus even more on the user's location, and display information about geographically-close places or dwellings.

A different approach can be found in the study by MacColl et al. (2008). Instead of relying on special software on the user's mobile phone, the presented Infopoint prototype pushes location-specific content to nearby mobile phones using Bluetooth. Not only the transmission method varies, but also the interaction design differs. The aforementioned services require users to request the information they want to retrieve ("pull"), whereas the Infopoint system proactively sends the information as soon as users reach a point of interest ("push"). Another tourist guide based on the push principle is the push-based version of GUIDE (Cheverst/Mitchell/Davies 2002, 276-281). Based on the user's location or opening times of attractions, relevant information is displayed without any user action required.

In contrast to the above-mentioned mobile guides, the main task of which is to deliver information, mobile games aim to provide a more active user engagement. REXplorer (Ballagas et al. 2007) is a mobile game designed for tourists that guides the users through the city. Users can interact with "spirits" at historical buildings, whereby historical information is conveyed in a fun way. The George Square system (Brown et al. 2005) is another tourist guide. Tourists cannot only share recommendations or photos with this system, but it also allows a collaborative exploration of the city. Online users can interact with the physically present tourists, and can "piggyback" on their experiences or can guide them around.

Most systems in the third part in this section either solely focus on delivering information relevant for the user's context, or provide game-based concepts in order to provide engaging experiences, whereas the concept in this work aims to combine both aspects. By exploring the effects of restrictions and constraints in mobile services, this work tries to find ways to engage people with content without relying on the play factor. The aim is to create an enticing user experience, so that users do not only look up information relevant for their context, but actively engage with the provided media.

2.2 Urban Informatics

Urban Informatics is a young research area and generally combines, as the name suggests, aspects of information systems and urban environments. Townsend proposes the following definition: that Urban Informatics is the “collection, classification, storage, retrieval, and dissemination of recorded knowledge in a city” (Townsend 2009, XXIII-XXVII). Foth highlights the involvement of the urban citizens and notes that “urban informatics research and development is concerned with the impact of technology, systems, and infrastructure on *people* in urban environments” (Foth 2009, XXVIII-XXXII). Another slightly different perspective on the term is presented by Williams, Robles, and Dourish, as they illustrate urban informatics as a research area at the “intersection of computer science, design, urban studies, and new media art” (Williams/Robles/Dourish 2009, 1-20).

This area is relevant for this study in two ways. One reason is that the *Mobile Narrative* was created to mainly target urban areas, and thus obviously falls in this category, as it comprises mobile technology and readers in urban regions. Then again, the application could also be exploited for civic engagement (cf. section 6), and used as a tool for improving urban life.

In the following section, related work from two areas is considered. First, projects dealing with real world interaction (section 2.2.1), i.e. ones that create a link between the digital world and the urban environment are regarded. Subsequently, current research in the area of urban media is explored and an overview of urban entertainment projects is given (section 2.2.2).

2.2.1 Real World Interaction & Information

Real world interaction typically describes the interaction with the digital online world through objects in the real world, and thereby creates a direct link between the two worlds. Semapedia¹¹ is such an example. It motivates their users to tag locations by using 2D barcodes as hyperlinks to digital information at Wikimedia¹². Users in situ can take a picture of the barcodes at a physical location, and then get automatically referred to the associated online content. Thereby, the collaboratively created online content is also shared offline. A similar project was presented by O’Hara et al. (2007, 11-44). In contrast to the Semapedia project of collaboratively tagging the whole world, O’Hara et al. deployed a system at London Zoo and provided additional information to that displayed on the signs at animal enclosures, such as videos of the animals in wildlife. Rohs (2005, 74) presents an advanced realization of this concept. The proposed system also works with 2D barcodes but, in addition, it recognizes phone movements, rotation angle, and the amount of tilting of the camera, and thereby provides new input methods. A similar approach to simple barcode systems is Yellow Arrow¹³, which uses a different technique for its realization. Instead of 2D barcodes, yellow arrow stickers with a unique code are distributed. By sending a text message via their mobile phones containing this unique code, users can publish stories or retrieve those from others.

Rekimoto and Nagao (1995) propose an augmented environment system with camera phones, called NaviCam. Therefore, real world objects are tagged with a colour ID and, if the camera

¹¹ <http://www.semapedia.org/>

¹² <http://wikimedia.org/>

¹³ <http://yellowarrow.net/>

is able to identify the ID, it displays additional information for this object on the mobile phone display. An office door equipped with such a colour ID could for instance tell a visitor when the occupier of the office will be back in his office. Another related approach for real world interaction is the usage of Near Field Communication (NFC), a short-range wireless communication technology. Instead of the aforementioned visual markers, or smartcards, so-called NFC tags are used to store data, which then can be received with NFC readers. There are already mobile phones on the market that support this kind of wireless communication. Broll et al. (2007, 319-321) present posters equipped with this technology. People could, for instance, buy cinema or train tickets simply by touching these “smart” posters with their mobile phone, or retrieve local news about traffic or sports (O'Neill et al. 2007, 19). The concept of the “Full-Embodied Web” goes even further. Matsumoto, Hashimoto, and Okude (2007) developed an internet umbrella called Pileus. The aim was to exploit an object of daily use, and augment the real world experience with information from social web services. Pileus provides embodied interaction, context-dependent information, and synchronization with web services.

This real world interaction via visual markers or radio communication was also thought of as one possible way to realize location restrictions. Dunekacke et al. (2009) for instance use 2D barcodes for the technical implementation for their “localized communication”. In the same manner, this could have been utilized in the *Mobile Narrative*. Instead of using markers that need to be distributed, the developed prototype used the Global Positioning System (GPS) to ensure that users are at the specified location (cf. section 5). This was easy to deploy since no markers had to be distributed, and provided navigation functionality in addition. However, the integration of markers would still make sense. It could facilitate the usage of less sophisticated devices, but perhaps even more interesting would be the visibility for people not using the application. People passing by a location with a marker would notice the information, and might be motivated to start using the service.

Besides the concept of using objects in the real world as a way to interact with the digital world, there has also been some research focusing on strongly interweaving these two worlds. Wikicity (Calabrese/Kloeckl/Ratti 2009) for instance is a real-time mapping system of city dynamics. It aggregates real-time information, such as mobile phone location and usage data, density of people, public transport information, and information about upcoming events and activities. The digital representation does not only reflect the city's status, but also influences and changes future dynamics, as citizens can adapt their behaviour based on this information. Cityware (Kostakos/O'Neill 2008, 196-205) is a platform that “aims to bridge the gap between online and physical social networks”. It facilitates the collection of quantitative data in the real and online world, allowing linking and the synchronizing of this data.

2.2.2 Urban Media & Entertainment

Recently, new technology and media has been used for design, artistic, and entertainment purposes within urban environments. Here, an overview of projects is given, though limited to those that actively include citizens and require user participation. Most projects focus either on the self-expression or on entertainment of citizens.

Spreadgun (VR/urban 2008) for instance is a system for self-expression. It is an interactive urban screen project where people can enter text that is then displayed on an urban screen.

People can enter texts on a touch screen, and then use a stylized canon to “shoot” a digital colour bag with the message onto the façade. Other people can overthrow messages if they do not like it, or can shoot their message on a different spot at the wall. TXTual Healing (Notzold 2009) is a collection of interactive urban screen projects. In contrast to the previous one with its tangible canon, the messages are sent through text messaging from mobile phones. One of the projects is a speaking skeleton. Museum visitors can have a conversation with it by sending text messages. The skeleton replies and also moves appropriately. In another project, interactive election posters with the title “I’m voting because” are displayed. Citizens can send text messages explaining why they are voting for this candidate, and then these messages are shown on the posters.



Figure 2-3. (a) SMS Guerrilla Projector (Troika 2009a), (b) Tool for Armchair Activists (Troika 2009b), (c) Jumble (LocaModa Inc. 2009b)

Another project concerned with displaying text messages in public is the SMS Guerrilla Projector (Troika 2009a), a device that enables the user to project text messages onto “public spaces, in streets, onto people, inside cinemas, shops, houses” (see Figure 2-3a), basically everywhere the person points the projector to. This allows messages to be displayed on very special and unusual places, and uses the attention caused by this for delivering the message. A system for exhibiting voice messages instead of text messages is The Tool for Armchair Activists (Troika 2009b), an installation for “remote rants and protests” (see Figure 2-3b). First, people send text messages to the systems, then the messages get converted into a spoken voice message using a computer voice, and finally it is presented to the public via a remotely controlled loudspeaker.

A less artistic, but more communicative, approach is realized in Wiffiti (LocaModa Inc. 2009c). Wiffiti is another system for public screens, displaying text messages as well as web content. In addition to the text messages via a mobile phone, people can also interact with the screen via Twitter¹⁴, a web interface, or by uploading photos to Flickr using the associated tag. A similar system for public digital screens is Fotowall (LocaModa Inc. 2009a). As the name already suggests, the system is for photos only. Users can send pictures to a specific e-mail address, which are then displayed on the screen. By using e-mail as a publishing channel, users can submit their photos from their computer or internet-enabled mobile phone. Peltonen et al. (2007) developed a public screen that not only enables interaction, but also collaborative use by providing multi-touch interaction. Their system called CityWall mainly displays photos of the area and events close by, shared by people via their mobile phone. Even though the previous mentioned systems are interactive, the displays cannot be manipulated while touching them. CityWall allows people to navigate through shared and published photos by

¹⁴ <http://twitter.com>

touching the display and scrolling through the timeline. The *Mobile Narrative* also provides means for self-expression. Users can submit their opinions, thoughts and comments, which are then displayed next to the content. In this respect, this kind of system differs significantly from the other systems. It does not support the public exhibition of contributions, but rather only presents it to other users and thereby to other members of the similar interest group, i.e. literary-interested people. It also enforces a strong connection between generated submission and provided content, which is not necessarily the case for other self-expression oriented systems.

In addition to the self-expression aspect, WiiSpray (Lihs 2009) also attaches great importance to entertainment. WiiSpray is a digital graffiti system. Amongst other things, Wii (Nintendo 2009b) technology is used to virtually spray graffiti on walls. This gives people the opportunity to express themselves without vandalizing public areas; and since it is only virtually, people can also play and experiment with it. Solely focused on urban entertainment is Jumbli (LocaModa Inc. 2009b), an interactive multi-player game. Various letters are displayed on a public display, and people can participate by sending text messages with words consisting of these letters to the screen, trying to make the highest score before their time is up (see Figure 2-3c). A game with the focus of storytelling is the so-called Manhattan Story Mashup (Tuulos/Scheible/Nyholm 2007, 37). Web users create stories, which are then illustrated by mobile players using their camera phones. If other players can recognize or guess what the photos stand for, the story is shown on public screens. An urban game for mobile phones is The Haunting (Crow et al. 2009, 158-178). It is a location-based game in a park in Montréal, where the object of the game is to locate ghosts in that area and capture them with the phone. In *Gopher* (Casey/Kirman/Rowland 2007), another locative game, players have to solve tasks in the city by creating and sharing images and textual content. *Pirates!* (Bjork et al. 2001, 423-430) is a mobile multi-player game, where each player takes on the role of a captain of a ship. The game objectives are to solve missions, explore the environment, and to trade and fight with other players. In Nintendo's Treasure Hunt (Nintendo 2009a) kids have to go on a treasure hunt in the real world, searching for Wi-Fi signals that unlock secret treasures. Other location-based urban games are often connected with a narrative, and thus a more detailed overview of related work will be given in the following section. In the *Mobile Narrative* concept, the entertaining aspects result from an intensified user experience, rather than from exploiting the user's play instinct. Thereby, the engagement with the content is anticipated to be more severe than if users are mainly hunting to achieve a goal.

2.3 Creative Writing

In this section, related projects in the field of "creative writing" are reviewed. LaBrant (1936, 292-301) uses the term creative writing for "free writing," i.e. compositions that are completely determined by the writer regarding subject, way of presentation, and length. Creative writing highlights the aspect of incorporating personal feeling or thinking into the composition (LaBrant 1936, 292-301). Dawson (2005, 21-48) emphasizes that the term does not necessarily refer to literary work, but to "any writing which is 'creative', i.e. original, unconventional, expressive, etc."

The advance of technology and the emergence of new media constantly provide new opportunities for innovative and unconventional writing. In this study, one new form - a *Mobile Narrative* - is developed. It exploits mobile technology in order to present the work, and thus related mobile fiction projects and research are explored in section 2.3.2. However, before that, a general overview of writing projects related to digital technology and new media is given (section 2.3.1). These projects are not only interesting because of their contextual proximity, but also because of their effects on reader and writer, which is also part of this study.

2.3.1 Digital Fiction & New Media

There are several different approaches of digital fiction or narratives. The one thing they have in common is that they take advantage of digital media in order to provide narrative experiences. However, there is no clear understanding of the terms “digital fiction” or “digital narrative.” Sloane (2000) defines “digital fiction” as stories that are typically written on and read via a computer interface, whereas others use the term rather for computer adventure games with a narrative focus (Douglas 2001). In this context, often the term “Interactive Fiction” (Montfort 2005) is used as well, typically as an umbrella term for text adventures, detective mysteries, and other work in which the reader interacts with the story. In this study, the term “digital fiction” is intended according to Sloane’s definition (2000) as a text-based story read with a computer. The projects in this section are focused on non-portable computer devices and interfaces, as “mobile fiction” is explored in the following section (see 2.3.2).

An early example of digital fiction is Storyspace (Bolter/Joyce 1987). It is a rather simple system for interactive or “hypertextual” fiction, which means that authors write various episodes in a hypertext editor, and link these within a structural editor. The reader sees only one episode at a time, and can reach the next one by using the links inserted by the author. As already mentioned, one project that profoundly influenced this study is Charles Cumming’s *The 21 steps* (Cumming 2008), an online story with a interactive map visualization. This work was part of a bigger project called *We Tell Stories*¹⁵. For six weeks, six different stories were published that exploited the “immediacy, connectivity and interactivity” (Penguin Group 2008) of current technology. In *Slice* by Toby Litt (2008), the reader could follow the story by reading the character’s weblog or following events on Twitter; even e-mail interaction with the characters was possible. *Fairy Tales* (Brooks 2008) is an interactive story, where readers can determine, shape, and customize the plot, and the creation of *Your Place and Mine* (French 2008) could be witnessed by the users, as the author was writing the story live and in real-time. In *Hard Times* (Mason 2008), a snapshot of the world of teenagers is taken, and in *The (Former) General* (Hamid 2008), the reader can choose a path around the character’s palace and thereby shape the story. Dreaming Methods¹⁶ is a portal for digital fiction with stories that can be rather categorized as adventure games. Fictional narratives are combined with multimedia to provide reading experiences that are compulsive, immersive, and atmospheric. An approach that attempts to deliver a “seductive coffee break” and a living

¹⁵ <http://wetellstories.co.uk/>

¹⁶ <http://www.dreamingmethods.com/>

room atmosphere is Carte Noire¹⁷, which provides users with the possibility to listen to stories read by popular persons, such as film stars.

However, digital fiction or narratives are still a niche phenomenon. Petrelli and Wright (2009, 509-526) point out that both authors and readers like to experiment and interact with these new kind of stories, and in their study all interviewees agreed on the fact that digital fiction will become more popular.

2.3.2 Mobile Fiction

In this work, the notion of “mobile fiction” is used as a subclass of digital fiction. Mobile fiction is also read on a computer-interface, but typically on a portable handheld device. This leads to various significant differences to general digital fiction. On the one hand, there are several limitations that arise. For instance, the reading devices generally provide limited capabilities compared to a standard computer, such as constrained screen size and data connection. Moreover, the reader’s surroundings alter from a usually rather quiet place at the desk to a noisy and lively environment outdoors that might be distracting and disruptive, which has to be taken into account for mobile fiction as well. On the other hand, this new kind of fiction also provides new possibilities. The reader can be brought to specific places that are related to the story or that support the atmosphere of it.

Most current mobile fiction projects focus on the aspect of connecting individual places with story parts, which is often called location-based fiction or storytelling. Paay et al. (2008), for instance, present such a system for location-based storytelling. Users experience the story interactively as the content responds dynamically to the user’s movements through the city. In order to fully experience the story, users have to collaborate with a partner by solving riddles and collecting clues together to get to the next part of the story. Riot! (Blythe et al. 2006, 127-139) is a location-based play for voices. Audio files about a historical riot are triggered when users arrive at specific regions, such as “rioters’ voices as they plundered the surrounding buildings”. Built with the same system, Urban Archeology (Crow et al. 2009, 158-178) explores the history of a Montréal city square. In contrast to Riot!, Urban Archeology does not provide the history of a specific event, but a collage of voice and sound snippets of multiple historical happenings. Likewise, HopStory (Nisi et al. 2004, 132-141) is a location-based interactive narrative. Users can collect cinematic media of a historically inspired day-in-the-life story within a building for later viewing. An augmented reality experience for visitors is provided by GEIST (Malaka/Schneider/Kretschmer 2004, 54-65). Visitors to the city of Heidelberg are able to experience a history lesson about the city during the 30 Years’ War in the seventeenth century.

Epstein (2009) describes these kinds of stories as “Terratives” or “Terrestrial narratives”, and presents several projects that also combine stories on mobile devices that are connected to the real world. Among other projects, Epstein produced a call-centre-driven story through Berlin and a Ground Zero Sonic Memorial (Epstein 2009). The former is a special kind of scavenger hunt, where a scripted operator guides participants. The latter is a memorial that tells a personal story about the tragedy that happened in New York City on September 11, 2001. *Go this way* (Chandler 2004) is a mobile fiction set in Melbourne that combines places and local

¹⁷ <http://www.cartenoire.co.uk/>

histories. Readers are shown a sign and a short text, “representations of the ‘Hobo’ language, used by itinerant workers as a means of communicating with each other during the nineteen thirties Depression”.

Another mobile fiction project is NarraHand (Morrison et al. 2009) which focuses on the collaborative creation of stories with mobile phones. African immigrants in Oslo use their phones to jointly produce a locative fiction work for their city. InStory (Correia et al. 2005, 102-109) is a system for mobile storytelling and gaming activities that are focused on the exploration of locations and places. The system provides means for tracking users and providing content, as well as allowing users to communicate with each other via instant messages. M-Views (Crow et al. 2003) is a system that supports the creation of mobile cinematic narratives. Authors can create videos and associate a location from which these videos can be retrieved. Clients can then download these videos if they are at the specified places. Giles, Marianek, and Freidel (2009) present another related project. In contrast to the previous authored systems, in the “Urban Encounters” experience participants are the authors and create collective stories by creating a personalized route and taking short videos on the way. The collected stories can then be re-explored or re-experienced by other participants.

This overview shows that many mobile fiction projects mainly connect places with story parts. Even though this is also part of the *Mobile Narrative*, the concept is not limited to that, but for instance also provides authors with the opportunity to specify certain times the story has to be read at. The *Mobile Narrative* is not yet intended for collaborative usage as, for instance, NarraHand. However, in contrast to most of the other systems, it provides a channel for user contribution, and thereby emphasizes and deepens the author-reader relationship. This could also be further developed, if desired, in order to enable collaborative story creation.

2.4 Commodity Theory

The concept of introducing restrictions and constraints in order to foster participation and engagement stems from the idea that scarce and rare commodities are often valued higher than goods that are always available. In the 1980s, for example, the *Cabbage Patch Kids* dolls were introduced into the North-American market and developed as the must-have toy for children. The high demand and the relatively limited supply caused a race for these dolls, so that some of the \$25 retail Kids were sold on the black market for \$2000 (McKeand 2002). Early on, economical researchers were examining constrained commodities, or changes in quantity and the impact on the value (Becker 1965, 493-517; Hicks 1986), often focusing on the influence of supply and price on the perceived quality of goods (Gabor/Granger 1979, 590-618). Worchel summarizes the research in this area as follows (Worchel 1992, 79-92): “[...] in the absence of information about a product, there is a positive relationship between price and quality (or perceptions of quality) and a negative and causative relationship between supply and price or quality.” This means that scarce and rare products are valued higher or perceived to be of better quality.



Figure 2-4. Lynn's model of scarcity effects (Adopted from Lynn (1992, 67-78))

Brock (1968, 243-275) picked up these theories, and formulated the *commodity theory*, in which the psychological effects of scarcity are explored. Commodities in this context referred to possessable, useful things, such as messages, experiences, or material objects. The main proposition is that “any commodity will be valued to the extent that it is unavailable” (Brock 1968, 243-275). An increase of a commodity’s value is seen as an increase of its perceived utility or desirability. Brock and Brannon (1992, 135-144) formulated a “liberalization of commodity theory”, in which they extend the domain of the theory from possessable items to traits and skills and to negative objects. Lynn (1992, 67-78) also extends the commodity theory. The so-called “scarcity’s enhancement of desirability” is explained with people’s naïve or informal economic theories. The model of scarcity effects (see Figure 2-4) assumes that people associate scarcity with expensiveness, and that expensiveness together with the attributed quality and the perceived status are “mediators of scarcity’s effect on desirability”.

Kofort and Tschoegl (1998, 445-457) examined the mentioned theories, and explored the effects of rarity in a case study, which also resulted in the conclusion that “the market value of rarity [...] comes directly from rarity itself”. This especially holds true when limited availability was caused by market conditions (Verhallen/Robben 1994, 315-331). Besides the pure unavailability of products, Jeffrey Inman, Peter, and Raghurir (1997, 68-79) showed that limited availability due to restrictions, such as purchase quantity limit, purchase preconditions, and time limits, could positively affect the consumer decision and increase the probability that the restricted product was chosen.

Further research investigates reasons explaining why unavailability may enhance desirability. Scarce products can, for example, provide powerful positions when dealing with others that want to exchange these goods (Emerson 1962, 31-41). Furthermore, the possession of scarce resources can also serve as a status symbol (Veblen/Howells 1965), and offers a sense of self-uniqueness (Snyder/Fromkin 1980). The latter is also called the “desire for unique consumer products (DUCP)” (Lynn/Harris 1997), and its manifestation can be observed in an increased consumption or usage of rare, innovative or customized products. Brehm et al. (1983, 21-48) also point out people’s physiological arousing effect of unavailable objects. In their research, it was found that a goal that was difficult to attain and needed a “high level of energization” was perceived as relatively more attractive than easier to attain goals.

2.5 Mobile Narratives for Situated Engagement

The *Mobile Narrative* concept developed in this study combines aspects of all previously presented disciplines. General mobile narratives are typically positioned at the intersection of mobile information systems and creative writing, and usually also integrate aspects of urban informatics. Developed systems are mainly mobile information systems, which follow in the footsteps of concepts and applications mentioned in section 2.1.3. By and large, mobile narratives are designed for urban environments, and thus incorporate also urban entertainment aspects as well as real world interaction (cf. section 2.2). Obviously, those concepts are also strongly influenced by other digital and mobile fiction, and developments in the field of creative writing.

However, current mobile narratives and other mobile services often lack real engagement with the provided content, and the user experience could be more intense. Users are not really keen on reading too much information on their mobile phone, and mobile fiction usually tries to overcome this motivation issue by designing the stories as games. Even though this might be an efficient way to create enticing user experiences, it does not lead to a more thorough engagement with the provided information. Users tend to see this as a game, and focus mainly on coming to the end of the game, such as solving a riddle or finding the “magical” ending.

There are two main differences of the *Mobile Narrative* developed in this study to existing ones. First, it includes a channel that allows users to contribute their own content. Users are encouraged to submit their thoughts or ideas for locations or individual chapters. By this, the system alters from one only providing content to a participatory service, where users become *prosumers* (cf. section 2.1.2). Second, the *Mobile Narrative* is not designed as any kind of game, and thereby does not rely on play instincts only. In order to foster motivation and enticement for the content, a different approach was taken. The idea of enhancement of desirability through scarcity was borrowed from the commodity theory (Brock 1968, 243-275) and expanded to mobile narratives. Limitations and restrictions were introduced to create a more motivating and engaging reading experience with higher valued content. Further, the possibilities for users to contribute were restricted in order to explore whether this can also lead to higher motivation for users to add their own submissions.

This work has several implications for the related disciplines. It examines a design approach for mobile services, which aims at fostering the user’s participation and on overcoming motivation barriers caused by cumbersome input methods. This might be highly relevant for mobile Web 2.0 services, which are highly dependent on user-generated content. However, other mobile services that aim for more engaging user experiences would profit from this approach too. From the urban informatics perspective, this study has also some benefits. The system shows a mobile information and entertaining concept, which could be used for civic citizens and tourist at the same time. Further, it could be exploited for community engagement purposes, such as civic planning processes, and thereby makes a contribution to improving civic life in an innovative way. It also affects creative writing, as it presents a new way of writing and reading. It explores the novel aspect that allows creative writers to have more control over where and when their stories are read, and what impact that has on the creative writing process, as well as on the reader’s perception and experience. It introduces a direct feedback channel from users to authors, and thereby influences the author-reader relationship.

This shows that this approach is a unique and innovative step for mobile narratives and mobile fiction, and thereby contributes to an advance in this area. But it is also relevant for the other presented disciplines and might be as beneficial for those as it is for the former.

3 Methodology

In this section, the methodology of this study is presented. The individual methods are described, and their contribution in regards to answering the research questions and developing a mobile narrative application are highlighted. Three methods were applied: first, requirements were analyzed in requirement meetings and interviews; secondly, an application design was developed and evaluated on the basis of a paper prototype; finally, the implemented application was tested in several user studies.

Since the research questions focus on users and their motivation to participate, a user- or human-centred design approach was chosen. According to the ISO 13407 standard on human-centred design (International Organization for Standardization 1999), five processes make up such a design cycle: (1) planning the human-centred design process; (2) understanding and specifying the context of use; (3) specifying the user and organizational requirements; (4) producing designs solutions; (5) evaluating designs against requirements. The applied approach is based on this concept, but was slightly adapted for this study (see Figure 3-1).



Figure 3-1. Process model of this study

Steps 1-3 were subsumed under one process labelled “analysis”. In this step, requirements were collected and specified. Further, this phase was also used to get a better understanding of the context. This was done in requirement meetings, as well as with author interviews. Parallel to this, a design in the form of a paper prototype was created, which was based on the outcomes of the previous step. These prototypes were tested for usability to avoid problems or misunderstandings with the handling. Additionally, the prototypes were later used to explain the applications to study participants. This design was then implemented in the form of a mobile application, and evaluated in several user studies. The applications were tested at three different locations in four runs, each time with small changes and adaptations. The individual methods are described in detail in the following sections.

Key principles of human-centred design are inter alia the active involvement of users and the iteration of design solutions (Maguire 2001, 587-634). These two aspects were also

emphasized in this approach. The *Mobile Narrative* has two kinds of users. One group are authors that use this platform to publish their work, and the others are readers that actually use the mobile application to read the stories. Both user groups were involved in this process and influenced the design. Authors mainly contributed to the analysis phase, whereas readers were primarily involved in the evaluation phase. The iterative aspect also played an important role in the development. Multiple consecutive user studies were conducted, and the results from each study were integrated in the next design cycle. Thus, the prototypes gradually evolved from the gathered results, and thereby were iteratively improved.

3.1 Requirement Meetings & Author Interviews

In the first step, several requirement meetings were held, attended by creative writers and urban informatics researchers. The goal of these meetings was to discuss the concept and the scope of the project, to understand the user needs as well as to identify the requirements for the planned application. Regarding the latter, categories of mandatory and optional functionality were defined and a time frame was set. The meetings were also used to familiarize participants with each other. In this manner, creative writers became aware of what technology could offer, and the urban informatics researchers got insights into the world of creative writing. The expected outcome was a set of requirements that should be met, as well as an understanding of the context of use.

After the requirement meetings, an early paper prototype (cf. section 3.2) was developed in order to be able to better illustrate the concept. In the following step, author interviews were conducted with the aim to develop a more substantiated understanding of the context as well as to identify more or sharpen existing requirements. Therefore, three authors were interviewed and the interviews were conducted one-on-one. One of them was asked to write a story for our *Mobile Narrative* study before the interview was held, and thereby had the chance to directly experience the implications of this new approach on the writing process. The other two were simply introduced to the concept by a short explanatory part.

The focus of the interviews lay on the effects and implications of these new kind of stories on the reading and writing experience. The questions can be divided into five topics:

1. *Effects on the reading experience*
2. *Effects on the author-reader relationship*
3. *Effects on the writing process*
4. *Design of a Mobile Narrative application*
5. *Feedback on paper prototype*

In the first part of the interview, the effects and implications on the reading experience were discussed. Changes for the reader and potential stories were identified, and advantages as well as disadvantages were pointed out. Subsequently, implications for the author-reader relationship and for the writing process were outlined. Next, the authors were asked about their expectations about the design of a *Mobile Narrative* application. In the last part of the interview, an early paper prototype was shown to the interviewees to check whether it met

with their expectations. Moreover, authors were asked to identify critical aspects or ideas on how to improve it. The transcripts of the interviews can be found in Appendix A.1.

The expected outcome of this second phase was to get more detailed requirements. A concept like the *Mobile Narrative* can only be successful if there are readers and writers willing to use it. The aim was to better understand the authors' needs, and thereby eventually get an idea about the readers' needs. Further, it was anticipated that through the knowledge and expertise of the creative writers, major issues and problems could be identified, as well as new potentials and opportunities revealed.

3.2 Paper Prototyping

Paper prototyping, also known as low fidelity (lo-fi) prototyping (Rettig 1994, 21-27), is a method to create quick and cheap prototypes for testing the design of applications, and to gather early feedback from users (Nielsen 1990). Paper prototypes are typically used in order to refine requirements and to test interaction and screen design drafts. Designers implement paper-based user interface elements, for instance screens, dialogues, menu, forms, using only office stationary, such as paper, acetate, pens, etc. (Maguire 2001, 587-634).



Figure 3-2. (a) Paper prototype (b) Participant interacting with paper prototype

This method has several benefits (Usability Net 2009). First, it only requires minimal resources and materials, and thereby costs are low. Further, it is also quick to build, which leads to almost immediate results and opens up the potential for multiple, quick design iterations. Potential problems are also detected at an early stage. Issues or mistakes made on a paper-based prototype can be easily changed, whereas written code might be more difficult to adapt. It also helps to improve the communication between users and designers, as it avoids the technology barrier and thus also allows non-technical people making suggestions. Another important point is the type of feedback that is typically received. When testing fully designed and implemented prototypes, users tend to comment on “fit and finish” issues (Rettig 1994, 21-27), e.g. design issues, such as font size or colours. On the contrary, paper prototypes usually help to find general problems or difficulties regarding the interaction. In a prototyping session, users interact with the paper-based version as if it was a working prototype. One member of the design team is responsible for displaying the responses of the application by exchanging screens or moving other interface elements. Participants are given certain tasks,

and difficulties or unexpected behaviour is observed and recorded by an observer or videotape. Users are usually also asked to “think aloud” and comment on what they think and do, as well as why they do so.

In this study, paper prototypes were created (see Figure 3-2a) and utilized for three different purposes: First, they were used to evaluate design proposals, which was the actual intended purpose. Participants first received a short introduction about the project and the *Mobile Narrative*. Then they were given the following instructions:

*Imagine you are outdoors and want to read the story on your mobile phone.
Use the paper prototype and interact with it as if it was a real phone.*

The users were asked to execute this task and were observed while doing this (see Figure 3-2b). Second, it was used for the author interviews (cf. section 3.1). Authors were asked for their expectations of a *Mobile Narrative* application, and then were exposed to the prototype. Hereby, the user needs and requirements were refined. Third, the paper-based version was shown to the participants of the conducted user studies (cf. section 3.3) in the introduction phase. Thereby, participants could simply focus on the interaction design without worrying about using the actual mobile phone.

The paper prototype was also iteratively used and improved. For each study, an adapted version was created with the input from previous prototyping sessions as well as user feedback from the user studies. Even for one study, several design iterations were undergone, and alternative design solutions were examined.

3.3 User Study

Based on the outcomes of the requirement meetings, author interviews, and the paper prototyping session, the concepts of a *Mobile Narrative* and a *Narrative Map* were implemented as iPhone applications. So far, the concept was mostly theoretically examined. In the author interviews, only one author had already written a story for this specific concept. The others had to imagine what effects this new way of storytelling could have. The same held true for potential readers. In the paper prototyping session, they had a chance to comment on the concept; however, they could not really experience the effects.

Thus, this was solved with several user studies. The aims of these studies were twofold. First, it should be explored whether users appreciate the overall concept and enjoy this kind of reading experience. Second, it should be examined whether restrictions and constraints may positively influence motivation and engagement and, if so, which of the restrictions are more appropriate and more effective than others.

In total, four user studies were conducted at three different locations (see Figure 3-4). Each user study focused on different aspects of the aforementioned aims. Two trials were run at Kelvin Grove Urban Village, one at Cooroy Lower Mill Site, and one at West End. In the following, the user studies are also referred to with acronyms: KGUV I+II represent the studies based in Kelvin Grove Urban Village, CLMS for the study at Cooroy’s Lower Mill Site, and WELM for the West End Literary Map study. The individual locations were selected to reflect different environments. KGUV is a master-planned inner-city community in



Figure 3-3. Parameters of user studies

Brisbane and provides an urban space with typical facilities for living, business and recreation. Cooroy, in contrast, is a rather traditional country town, however with an urban village-like atmosphere. West End is another inner-city suburb of Brisbane. Unlike KGUV, West End is not a master-planned suburb. It was one of the first suburbs in Brisbane. Additionally, West End is strongly connected to literature, as several stories takes place in this suburb or were written by authors from this area. The participants of the user studies also differed. In order to test this concept with a broad range of age groups, the Brisbane-based user studies were run with participants that were between 20 and 68 years old, whereas the Cooroy-based study was conducted with students, all between the ages of 13 to 14 years.

The individual user studies were also necessary since several different aspects were tested (see Figure 3-3.). One reason for this was that two different concepts were examined. In three of the four trials, a continuous narrative was utilized to explore the effects of restrictions. In the West End user study, this concept was slightly modified by presenting short extracts of stories that were related to the area, or small text snippets about authors that had a connection to this neighbourhood. Further, the user task also varied. In the first trial, participants had to simply read the story; the focus lay on examining the general concept. In the following, users were also asked to actively contribute by submitting their own content. The restrictions that were explored were another important differentiation between the individual studies. In the beginning, only the location of the information access was limited. Subsequently, the submission of content was constrained to the location. In the later studies, time restrictions and the length constraints for contributions were also applied.

The combination of different participants groups, locations, and user study parameters provided comprehensive results. In each trial, new restrictions were introduced, thus the four user studies were necessary in order to test the different restrictions and constraints on information access as well as on submission of content. The aim of utilizing different concepts, participants, and locations was to obtain results that hold true beyond the scope of this project.



Figure 3-4. Aerial view of Kelvin Grove Urban Village (top left), Cooroy Lower Mill Site (top right), and West End (bottom)

The studies were conducted with a relatively small set of participants. This method was inspired by Nielsen's Heuristic Evaluation (Nielsen 1992; Nielsen/Molich 1990), a usability evaluation method for user interfaces. Heuristic Evaluation is done by examining an interface and commenting on well or badly implemented aspects, usually based on a set of usability principles. Nielsen examined the benefit of the amount of evaluators, and found that most problems are already found by the first five evaluators, and that four evaluators are the optimal number from the cost-benefit perspective (Nielsen 1994, 25-62). However, this method is usually only appropriate if general or major problems are to be found. Smaller, detailed issues are typically not found with this process, but it provides a good way to ensure a relatively smooth usage of interfaces. This study intended to examine the effects of restrictions and constraint on the motivation of mobile users. The aim was not to provide statistically proven results that they do have a positive influence, but rather a first examination of this approach is reasonable. A study to validate the results with a larger set of participants needs to be done in the future (cf. section 6). The focus of this work lies on examining the restriction-based approach, in contrast to the *anywhere, anytime* approach, and the exploration of advantages and disadvantages experienced by the participants. Thus, each study was conducted with five to eleven participants; in total, 25 participants were examined.

In the following sections, for each user study the details about the settings, e.g. the location, the utilized narrative elements, and the participants, are illustrated. Further, the tested restrictions are highlighted, as well as the expected outcome.

3.3.1 Kelvin Grove Urban Village I

The first user study was conducted in Kelvin Grove Urban Village (KGUV), which is a master-planned inner-city community in Brisbane, Australia. Developed by the Department of Communities and Queensland University of Technology (QUT), KGUV encompasses a 16-hectare area offering more than 1,000 residential units, ranging from affordable student and low-income accommodation to luxury high-end apartments. The focus of this community lies on developing a sustainable, mixed-use urban environment. KGUV is located two kilometres from the central business district, and is built on former army barracks (State of Queensland - Department of Communities 2009; State of Queensland - Department of Communities/Queensland University of Technology 2009).

The historical background of this area was exploited for the story that was utilized in this trial. Luise Toma specifically wrote the story called *Shotgun Times* for this purpose. The story is set in the early 1940s and is built around the Australian and American military stations in Kelvin Grove. The story consists of four chapters, each around 900-1100 words, and takes place at four different locations in Kelvin Grove (see Figure 3-5b): (1) Gona Parade Car Park; (2) Victoria Park; (3) A-Block of QUT; (4) McCaskie Park. At Victoria Park, the chapter started with the following extract:

“Margaret Wiggum was late. Her first class had started at nine o'clock but she couldn't help but keep waiting. If you look up, straight up the hill, you will see a little beaten trail coming down from the top. Margaret was watching that trail like a hawk. She was willing a figure to appear at the top with such force she was giving herself a headache. On her stack of books, sitting next to her on the ground, the last tiny remainder of a chocolate bar was melting in its colourful wrapper. Margaret picked it up, careful not to smear her fingers with the sweet stickiness and hurled it as far away from her as she could.”



Figure 3-5. (a) Participants at KGUV (b) Locations and route at KGUV

As already indicated in Figure 3-3 (p. 34), in this study participants were merely asked to read the story without contributing their own content. Therefore, only the information access could be restricted. In this case, location restrictions were applied, which means the chapters could

only be accessed within a radius of 50 meters around the respective location. The motivation for this was the idea that, by forcing users to go to a defined location and to put effort and energy into the information retrieval (cf. section 2.4), users might value the content higher.

This study was conducted with five participants, who were all female and between 20-68 years old. The participants were recruited with the help of the Practices of Literary Tourism team of QUT, and selected persons all showed a general interest in literature. First, the participants got an introductory overview of this project. The paper prototype was shown in order to explain the interaction flow, and afterwards the participants were familiarized with the iPhones and with the usage of the *Mobile Narrative*. Then they were asked to walk around and read the story (Figure 3-5a), which took 45-60 minutes. Subsequently, short one-on-one interviews were conducted. The interviews were recorded to allow a later analysis.

The interviews included questions regarding the reading experience, the effects of the restrictions, as well as personal preferences, reading behaviour, and previous knowledge. The set of questions included qualitative and quantitative feedback. The following questions were mainly posed for qualitative observations:

- *Do you know more about Kelvin Grove and Brisbane after taking this walk and reading the story?*
- *Can you relate the descriptions of place and time in the story with how this area looks today?*
- *Do you think the story contained enough/too many/too few descriptions about place and landscape? Why?*
- *Was it worth reading at the specified places?*
- *Please comment on the following aspects of your reading experience:*
- *Did this way of reading allow you to immerse yourself within the story and the world described in the story?*
- *Did you feel you were in the real world the whole time?*
- *Were you switching between both worlds?*
- *Did both worlds become the same?*
- *Did you feel being in one world (story world/real world) with influences from the other?*

For the quantitative observations, participants were asked to rate their level of agreement (1=I strongly disagree, 5= I strongly agree) on a Likert scale (Trochim 2009) for the following statements:

- *The requirement to go to different places in order to read the chapters was unnecessary and annoying.*
- *Being at the place where the action takes places was an enhancing and exciting feature of reading the story.*

- *Reading about a place and its history, while sitting in situ, makes it a lot more comprehensible and vivid.*
- *Changing the focus from reading on the screen to looking around to observe the environment is distracting.*
- *The instructions and restrictions of where to read the story were patronizing.*
- *The specified locations were well chosen for enhancing my enjoyment of this story.*
- *Reading on the spot does not contribute to a better understanding of the place and its history.*
- *There were no difficulties in switching between reading the story and examining the described place.*

In addition, several questions about their previous knowledge and personal preferences were posed. The complete guidelines and transcripts for this study can be found in Appendix A.2.1.

3.3.2 Cooroy Lower Mill Site

The Lower Mill Site is situated in Cooroy, Australia, a country town at the northern Sunshine Coast, about 110 km north of Brisbane. The Lower Mill Site is a redeveloped community precinct, where formerly Queensland's largest hardwood mill was located. It includes historical, cultural, and educational facilities. The vision of the site is to attract organizations focused on "Design for Living" activities, and four precincts are planned to be created: (1) Creative and Learning; (2) Design for Living Centre; (3) Design for Living Enterprises; (4) Greenbelt (Sunshine Coast Regional Council 2009).



Figure 3-6. (a) Participants at CLMS (b) Locations and route at CLMS

For this study, a story called *The Mill Men* by Louise Francis was used. As the title suggests, the story is centred on the mill men's lives. The story was also specifically written for this trial, and includes several text snippets that the students from the participating class had written. The story also consisted of four chapters; however, those were significantly shorter,

ranging from 100-600 words. The associated places were partly located at the Lower Mill Site, and partly set in the town centre (see Figure 3-6b). The following paragraph reveals the beginning of the story:

“It was Friday. The morning dew covered the grass like snow. Camphor laurels surrounded the mill blocking the sunlight in the early morning as the Mill men sat in front of the boiler to keep warm. The tall chimney bellowed steam, the giant lifts of timber stood sentinel-like and in the distance at the railway groups of teens chattered in readiness for the ‘8 o’clock’ to Nambour. In just a couple of hours the village would be bustling with farmers doing the weekly shop, having a cuppa tea or maybe a cold beer with their roast lunch at Ferros’ Café.”

In contrast to the previous trial, the participants this time were also asked to submit comments to the individual chapter. The reading process was retained unchanged, i.e. the chapters could only be retrieved if the users were close enough to the associated location. Additionally, location restrictions were also applied for the submission of content, which means that participants could only send their comment if they were at the location the comment was about. If participants walked on after they had finished the chapter, they could not submit their feedback. The idea behind this was to get immediate feedback, as well as chapter and location-related comments.

This study was conducted in cooperation with the Noosa District State High School. Some 11 participants, consisting of 8 male and 3 female students, were recruited from a class. The students were all between 13 and 14 years old, and were divided into three groups for the study, of which all were accompanied by a supervising teacher.

Again, the participants got an introductory overview in the beginning while in the classroom, together with a briefing on the basis of the paper prototype. Afterwards, the whole group went to the starting point of the trail, where each group was familiarized with the iPhones. Next, the groups went together with their associated teacher along the path of the narrative (Figure 3-6a), which took about 30-45 minutes per group. Afterwards, the groups were interviewed about their experience.

As before, questions about the effects of this way of reading and their personal preferences were posed (see section 36, page 37). In addition, participants were also asked how they experienced entering comments while being on the spot (cf. Appendix A.2.2):

- *Did you submit a comment? What kind of comment(s)?*
- *What do you think about the necessity of being on the spot for commenting?*
- *Did you feel urged or motivated to comment, because you could only comment on the spot and could not procrastinate writing the comment?*
- *Do you think your comments were influenced by the fact you were still seeing the place while you were writing, and/or by the fact that you had to submit shortly after reading the associated part of the story?*

3.3.3 Kelvin Grove Urban Village II

The second user study based in Kelvin Grove Urban Village was conducted with a mainly similar setting. The same base story was used, and thereby the narrative path through KGUV remained the same (see Figure 3-5b). However, the story was slightly adapted due to the intention to integrate time restrictions. In order to connect the story tightly to the time of the day, some additional time references were inserted into the original *Shotgun Times*. Since these were only minor changes, the chapter length remained almost unchanged. One of the adapted paragraphs is shown in the following:

“Sitting between the barracks, squinting in the morning sun (as you might be), David Wiggum was struggling to roll a cigarette. He’d never been one for smoking, not until he joined the army. Smoking, it seemed, was the only legitimate reason to stop. Stop digging endless trenches, stop dismantling and reassembling gear, stop the endless tasks his superiors never grew tired of dreaming up. Cigarettes made you invisible.”

As already implied, in this trial time restrictions were explored in addition to the location restrictions. Thus, readers did not only have to be at the correct location to retrieve a chapter, but also request it at a certain time. The chapters were accessible at the following times:

1. 9.30 am – 9.50 am
2. 9.45 am – 10.05 am
3. 10.00 am – 10.20 am
4. 10.15 am – 10.35 am



Figure 3-7. Participants at KGUV II

Here, the concept was to foster enticement by providing only temporary access. These times were selected so that the readers, on the one hand, had enough time to read and walk to the next station while, on the other hand, could experience the fact that there were some restrictions. By setting the time frames too big, the reader would not have experienced any difference. Also intended was the idea to let fast readers wait a little bit, and experience the effects of this. As in the Cooroy-based study, participants were asked to submit their own content. In contrast to the previous trial, where users were merely motivated to use the comment function for personal feedback, in this study participants were asked short questions

about the individual chapters. The aim of this was not to investigate whether readers had thoroughly read and understood the story, but rather to support them and assist them by pointing out a topic they could write about.

The following questions were posed for the four chapters:

1. *What kind of sense of place and time do you get from this chapter?*
2. *How do you think the story continues?*
3. *What would you do if you were Margaret? What would you expect David to do?*
4. *How was your overall experience of this story?*

For the user contribution, the time restrictions were also applied. The users had the chance to submit up to five minutes after the time frame for accessing the chapter. This time frame was chosen to allow people to finish writing their submission, but forcing it to do it shortly after they read the chapter. For the information access and the submission location, restrictions were applied as in the studies before.

This study was conducted with four participants, of which three were male and one female. The participants were between 23-26 years old. The execution of the study was very similar to KGUV I. As before, qualitative and quantitative questions were posed. However, this time these parts were done separately. In the interviews, only qualitative questions were discussed, as the quantitative ones were answered using a short survey (cf. Appendix A.2.3). The interview guidelines were based on those of the two previous studies. In the survey, participants again had to rate their level of agreement for several statements, including previous introduced statements (section 3.3.1, page 37) as well as the following ones:

- *Reading the story at the specified times did make the story more exciting.*
- *Being able to comment only in situ and within a certain time frame positively influences the comments, as everything is still fresh in the mind.*
- *Reading the story at the time the action is happening positively contributes to making the story more comprehensible and vivid.*
- *The requirement of reading the chapters at specific times is unnecessary and annoying.*
- *The time and place restrictions of comments were motivating myself to contribute, as they did not allow procrastinating it.*
- *Writing on the go was cumbersome, and I would have preferred to submit comments later on.*

3.3.4 West End

West End is an inner-city suburb of Brisbane, Australia. It is a vivid suburb lined with cafés, bars and restaurants. Located about two kilometres southwest from Brisbane's central business district, it provides various shopping options, such as designer boutiques and

specialty stores, and is also situated in the direct neighbourhood of several cultural institutions, such as Queensland State Library, Queensland Performing Arts Centre, Gallery of Modern Art, Performing Arts Complex, and Queensland Museum.

For this study, not a continuous story was utilized, but rather several story extracts and text snippets about authors were offered to the users in the *Narrative Map* concept. The texts contained around 112 words. The text snippets were either about authors that lived in that area, and thereby had a strong connection to certain locations or facilities, or extracts from stories that took place in West End. Seven points of interests were defined (see Figure 3-8b): Avid Reader, Bent Books, Estelle Pinney's house (21 Franklin Street), The Greek Club, West End Pool, Musgrave Park, and Boundary Street. For instance, an extract of David Malouf's *Johnno* is displayed at the Greek Club:

"I don't know when Johnno discovered the Greek Club, or how, but that was where we were to be found most often on those Friday nights, and the long dimly lighted room, with its marble-topped bar and tables, its blacked out windows and sawdust floor, is irrevocably associated in my mind with his conspiratorial phase. The barman, a sleepy, bare-armed Cretan called Stavros, served us cognac with little sideplates of tomato and olives. From the next room came the pock of billiard balls, and an occasional cry from half a dozen throats as a spectacular win was made at one of the card tables, where dark, moustachioed figures sat close under the lamps in a fog of driftless smoke.[...]"

Instead of following the path of a story, the users could stroll through the city on their own defined path. On a map, the mentioned points of interest were indicated, and the texts could be retrieved if the users were close enough. In contrast to the previous narrative or literary trails, this concept was called *Narrative Map*, and the implemented realization was named *LiteraryMap*. Thus, this study was called West End Literary Map (WELM).



Figure 3-8. (a) Participant at WELM (b) Locations and route at WELM

The study participants were, as before, asked to submit their own content for the individual chapters, and were therefore given some of the following questions:

- *What kind of sense of place do you get from this marker?*
- *Does this site look ‘uniquely’ Brisbane or Queensland? Why/Why not?*
- *What does the passage make you think about the Greek Club?*
- *Does the passage still relate to the site? Why/Why not?*
- *Does the passage still relate to the site?*

For the information access, only location restrictions were applied. On the submission side, mainly the size was constrained. User responses were only allowed to be 140 characters long. This idea was motivated by Twitter, which successfully operates as a micro-blogging service with a limit of 140 characters per post. If the participants exceeded this limit, the content could not be submitted. The submissions were also slightly dependent on the location, as the comment function could only be reached when the users were close enough to the associated location. However, after having opened the comment screen, participants could also have continued their walk and submitted their feedback from a different location.

This study was conducted with five participants, four female and one male, who were between 23-68 years old. After a short introduction, participants were asked to walk around and visit the points of interest (see Figure 3-8a). In addition to the iPhone, participants got a paper map of the area with a possible route indicated. This part took again around 45 minutes, followed by interviews about the reading experience and a survey the participants had to fill out. The latter was basically the same as in previous studies. The set of questions for the interviews (cf. Appendix A.2.4) included the ones from earlier trials, as well as the following regarding the new concept of the *Narrative Map*:

- *What do you think about reading a text at a place that was closely connected to the author (e.g. at Estelle Pinney’s house)? Does it affect your reading experience?*
- *What was your experience when you were reading an extract of a story that took place in the area you were walking through (e.g. reading about the Greek Club while standing in front of it)?*
- *Could you relate the descriptions of the place in the extracts with how this area looks today?*

In addition, several questions regarding the user-generated content and its limitations were added:

- *What do you think about the idea of forcing people to comment while they are in situ, instead of letting them submit their contribution from their computer at home?*
- *How do your comments differ from comments that you would have submitted from your computer at home?*
- *What was your experience with the character restrictions of your comments?*
- *Did the character restriction influence your motivation to contribute?*
- *Did you really feel restricted?*

- *Or did you like it since you did not have the pressure to write that much?*
- *Would you have preferred unlimited comments?*
- *Had the character limitation an effect on the valuation of your own comment?*
- *Imagine you were only able to submit your comments within ten minutes after you read the text for a place. What would you think of such a restriction?*
- *Would you feel too stressed? Or would it motivate you to immediately sit down and comment?*

4 Discussion

This study explores the effects of restrictions and constraints on the motivation and engagement of mobile users. In this section, the results and outcomes are presented. First, for each proposed method the gathered data is presented, and observations and findings are described. Following the structure of the previous section, section 4.1 outlines the results from the author interviews, followed by the findings from the paper prototyping sessions (section 4.2). Section 4.3 then reports on the outcomes of the four conducted user studies.¹⁸

4.1 Author Interview Outcomes

In the author interviews, the *Mobile Narrative* concept and its effects on the reading and writing experience, as well as implications for author-reader relationship, were explored, and possible solutions for a technical realization of this idea were examined.

The interviewed authors all described this way of writing and reading as exciting but also challenging. Several ramifications for the stories were also mentioned. In order to fully exploit this way of reading, stories need to take place at several different locations, as the following interviewee described it:

“It seems to be something to do with working out a plot along the lines of moving to different places. [...] If you have to write something for mobile technology, [...] then you have to think about the plot, and about how you can move it to have enough places to go to.”

The challenge of this is the limitation to a “certain, small geographical place”. Authors have to build the story around a set of locations, which need to be in reasonable proximity. Settings within different countries, or stories with a back and forth switching between two settings, are not possible or appropriate.

Further, the *Mobile Narrative* concept also has impacts on the length of the stories and the individual chapters. It was claimed that sections need to be shorter than in a regular book, and one author suggested having a word limit, worked out through user studies. The content and the relation between the setting and the plot are also affected. A shift towards a stronger focus on landscape and setting was predicted:

“It would be hard as an author to imagine not to want to emphasize setting and place.”

“It’s an effect on the writer in terms of how much they have to describe setting, and how much focus they put on different elements like setting, plot, and character.”

It entices authors to strongly integrate the environment. However, authors also have to take care of the direct linking of setting and plot, so that the setting is part of the story and not only

¹⁸ Transcripts of the outcomes are presented in Appendix A; further material can be found in the attached CD (cf. Appendix C).

a feature. Along with these effects on the stories goes a change in the way stories are written. The fact that authors write about an existent environment instead of an imagined world was seen as less creative but rather descriptive:

“Because in principle [...] I make the world and they will see it, but you don’t have to, you just describe what is there and use that, so this is almost a little bit less creative, but more considerate.”

The author also identified this as a major difficulty. If authors want to closely relate to the environment the users are reading the story at, they cannot invent and imagine a lot of extra things. Obviously, in historical or science-fiction settings, authors could adapt the environment of the story world. However, to achieve a reading experience that benefits from the fact of being on-site, authors should still show parallels of the real and the story world, and thus need to stick to what really is at the specified location to some extent. In order to achieve this, all authors would write their stories on the spot, which would lead to “a real engagement with the landscape rather than a reflective one” comparable with how “impressionist [...] forced people out of the studio”.

The interviewees also pointed out numerous alterations in reading manners and experiences, both positive and negative ones. Disadvantages were seen in the accessibility, as stories cannot be read in bed, for example, and the reader has to make a special effort to be able to read them. Moreover, concerns were raised that the free flow of the imagination may be interrupted. People like to imagine the story world themselves, which is one reason why a lot of people do not enjoy watching movies based on books. Thus, not all readers perceive the combination of reading and visuals in the *Mobile Narrative* concept as a positive development. One author even assumed that many writers would see this way of writing as “sort of cheating”, since good writing should do everything needed for a story. Advantages were seen in the more intense reading experience. One author summarized it in the following way:

“Your senses are being aroused, in all kinds of ways, rather than just through the reading experience. You are in the place, you’re seeing the world the author saw. You are almost feeling as though you are having a conversation with the author, about the place you are in. I think that is exciting and pleasurable.”

Another author also highlights that, while reading in situ, the “senses are highlighted”. Another neutral comment was made about the reading experience for groups. Typically, if a group of people read a story, everybody creates their own story world and so has a personal experience. This concept allows users to have a similar experience, since everybody sees how the world in the story appears. The experience is “kind of homogenized”.

Authors were excited by the fact that they knew where and when the story was read, and suggested several ways of exploiting this. They could reduce their description of setting, as certain knowledge could be assumed from knowing the reader’s position. Or authors could directly relate to the reader, and even use second person description, such as “Look to your right!” One author envisioned integrating visual and audio effects, by using predictable events in the environment. In this way, a train passing by at a certain time, or the ringing bell of a clock tower, could become part of the story:

“You could do really cool things, like you could have people in very scary places where you know scary things will happen, that’ll be a train went by that’s very loud.”

The feedback regarding the direct channel between author and reader was generally positive. Authors like the idea of getting more and immediate feedback about their work, but a moderated way of doing this was suggested to filter offensive and inappropriate comments. The fact that readers switched from an “only consumption” mode to an interactive one was also seen as positive, and could lead to a more engaging experience.

Regarding the realization and implementation, various issues were raised and suggestions proposed. All authors agreed that the general design should be simple and user-friendly in order to allow as many people as possible to read it. Generally, the interviewed authors proposed using a reading section that displayed the chapter content and a map together with instructions to guide and direct readers to the correct location. Additionally, one author suggested using pictures for showing how the area used to look and/or photos that assist the reader in finding the correct spot. The latter could be done either by taking a photo of the location the author wants readers to be at, for instance a bench they are supposed to sit at, or by integrating a photo of the view readers should have while reading. Readers then could compare what they currently see to what they are supposed to see to verify their location. Several concerns related to the accessibility for aged people were mentioned, such as reading off the screen and interacting with these kind of smartphones, might be too challenging:

“And it’s that generation that would be a perfect generation for this project, because they are really keen. They’ve got time, they are interested in stories, and they are interested in the places they grew up, and I think that is really beautiful. In a way, a scaling back of the technology would not hurt.”

The author mentioning this also proposed a possible solution. Handing out paper-based versions of the maps with the locations indicated on it would at least reduce the difficulties elderly people might have with navigating the integrated map. On the other hand, the same author envisioned having a version that is “even more visual and dramatic” for generations who have grown up with this kind of technology, e.g. a video of the author reading the story.

These results deliver an insight into the effects and implications of the *Mobile Narrative* concept on the writing and reading experience, and also provide valuable information about designing such a system. They show that authors found this concept interesting, and that it can lead to a strong engagement of authors with the places during the writing process, as well as to engaging experiences for the readers. The author’s determination of the user’s context unleashes “enlivening, interesting and exciting” potentials in the field of creative writing. However, not all suggestions could be implemented in this project. For instance, a multimedia version with videos of authors reading the story was out of scope due to limited resources, but it shows possible directions for future developments. Still, the implemented design (see section 5) incorporates the main requirements mentioned by the interviewed authors, such as a simplistic and user-friendly design, a map, as well as a reading section and textual instructions, which indicate the next location the reader has to go to.

4.2 Paper Prototyping Outcomes

In paper prototyping sessions, mainly positive feedback regarding the proposed design was gathered. However, one reason for the fact that not many problems regarding the interaction could be observed, is the relatively simple interaction. Participants did not have to complete difficult and highly complex tasks, which include many steps or user input, but rather a simple task that could be solved with a few steps.

In general, the participants appreciated the design's clarity and simplicity. The required functionality was easily found without a training period, and users liked the breakdown into individual tabs for different functionalities (see section 5.2.2).

However, some issues regarding some of the interface elements were raised. In the reading section, for instance, participants sometimes struggled with “flipping” the page. When they finished reading the currently displayed text, users were searching for a “Next Page” button. Such a button was not intended. In order to provide a constant reading flow, the text was supposed to be in a scrollable text field, so that users could simply move the text with their finger. This option was not obvious to users, and so scrollbars indicating this feature were added. In the map section, some participants were not aware of the zooming and panning possibilities. However, as the standard interaction for map on the iPhone was intended to be used, no adaptations were made. Another participant suggested having a “Reset” button that resets the map to the initial state, in case the zoom level chosen was too high or low. Therefore, a “Refocus” button was added, which should also centre the map on the user and the relevant locations.

A general suggestion was to design features according to already familiar interaction or design techniques. For instance, it was mentioned that comments should be better separated from the actual content, and should follow the design of blogs, where each blog entry may include comments which are displayed at the bottom. Overall, the implications on the design were relatively similar to the ones from the author interviews. In order to reach a broad range of users, a clear and simple interaction design should be chosen, and interface elements should be designed on the basis of already well known or widely used interfaces.

As explained in section 3.2, the paper prototypes were also used in the briefing session of the user studies. This proved to be a good concept. Particularly for older people, or those people not technically-minded, it helped to show the interaction on the paper-based version. One user commented that the handling seemed to be straightforward on the paper version, and so the anxiety of using a new technological device such as the iPhone was lessened.

4.3 User Study Evaluation

In this section, the results of the user studies are described and discussed. The results are not separately listed for each study, but divided into the different aspects that were tested in the studies. The results were gathered in follow-up interviews after the user study, as well as surveys the participants had to fill out. Thus, both qualitative and quantitative data was collected. First, applied location and time restrictions on information access are examined,

and then findings from exploring the different constraints on user-generated content and its submission are presented.

4.3.1 Location-restricted information access

The location restrictions on information access are part of the core concept of the *Mobile Narrative*. They force users to go to specific locations in order to be able to retrieve the content or, more specifically, in this project the individual chapters. These location restrictions are a fundamental part and lay the foundation for the “*Mobile*” part of the concept. Without it, readers would not be required to read the chapters in situ. Users would then only employ mobile technology, but the reading act would not necessarily be mobile. Hence, the location restrictions on information access were always used in this project and its effects explored in all four studies.

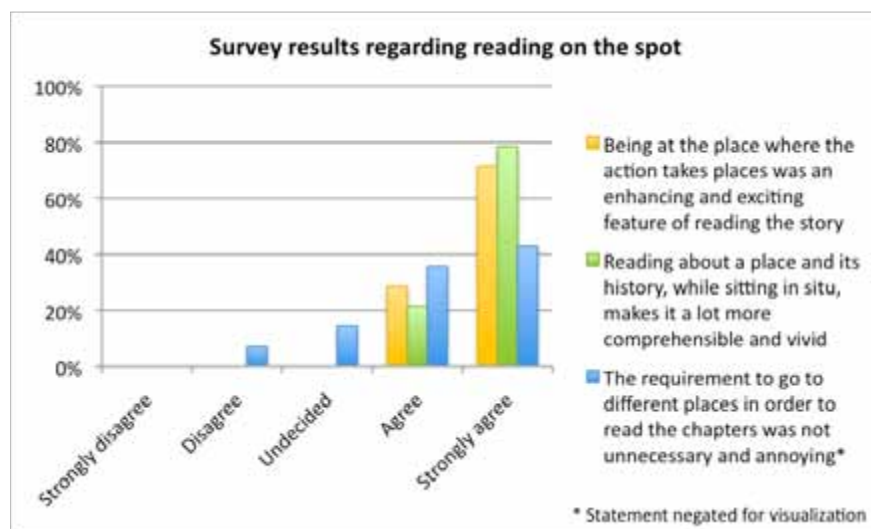


Figure 4-1. User responses regarding the likeability of reading on the spot

In three studies, namely KGUV I, KGUV II and WELM, participants had to fill out a survey after the trial. In those responses (see Figure 4-1), the majority of participants ($\approx 93\%$) did not find the location restrictions unnecessary or annoying. On the contrary, all users agreed that reading on the spot was an enhancing feature that makes the story more exciting. Further, all were of the opinion that this way of reading makes it a lot more comprehensible and vivid, especially with regard to understanding the place and its history.

This was also reinforced in the interviews of the four studies. Participants were impressed and excited, as the following comments given in the interviews show:

“It made it more like a treasure hunt. You got a reward for going to different places, and you got more of a feel for what was at the location and the setting being at the site.”

“You did get involved with the story rather than just reading it.”

“You had to go to each place to find the magical ending.”

“It’s impressive to be in exactly that spot.”

Also, some of the comments submitted by mobile phone during the trial reflect this kind of spirit:

"[...] it sounded like a movie in my head."

"I really enjoyed [...] finding out what would happen, and the integration of local geography and history into the experience."

Most readers really enjoyed the reading experience and the combination of narrative elements with actual environments. In the author interviews, one participant mentioned that addressing the reader directly would "feel like an artificial device". However, the responses of the readers differed significantly. Several users pointed out that they especially liked it when they and their context were addressed directly:

"I liked it when they were like 'where you are sitting now'."

"For example, the one comment 'you can't have a look at this, because of the trees and the buildings now, but if you walk there...' - that was cool."

"It was really cool when it mentioned the actual names like 'Victoria Park Rd' because you were actually there and those were the really exciting parts, when you could look up and be like 'That's where I am'. So more of those would make it even more dynamic."

Even though several participants, primarily young students from the Cooroy-based study, found it hard to relate the described places with the actual places "because it is a lot different now" and there was "all the modern stuff around," the majority of users did not have any problems relating the descriptions of place and time in the story with how the area looks today. This can also be seen in the following statements:

"If your environment is what you are reading about, it's easy to relate to what you are reading about."

"I thought this was actually quite well done in the story. It was integrating it well, the current geography with history."

*"Yes, it looks like it was only plucked from the hills of Greece yesterday."
(Comment submitted during trial)*

By linking the passage to places, readers were able to read about places and experience the locations at the same time. This helped readers to understand and imagine the past of this location. One student at Cooroy said that this concept helps to "visualize what it was actually like", even though a lot of things had changed; you "could visualize the old". Further, readers were able to compare the situation and setting described in the story with how it looked today, which participants really enjoyed. Readers remarked that sitting in situ and being able to compare "what things were and what they are now" was interesting, and sometimes really astonishing if the two worlds differed tremendously ("wow, how times have changed"). This was also captured by the comments submitted by the participants during the studies. Some participants stated how the two worlds differed:

“No blacked out windows here and they’re playing pop music. Malouf’s Greek club is much more romantic.”

“The park looks more serene today. No signs of thuggish police, only people relaxing, which belies its tragic past.”

Besides the aforementioned effects, the location restriction also positively influences the original purpose of the texts. Even though an increased enticement and motivation is highly desirable for this, the *Mobile Narrative* is mainly a story, and so the reader should immerse him/herself in the story and understand what the author wants to deliver. Many participants remarked that being at the spot where the story takes place effectively supports the reading experience, since the situation and context become a lot clearer:

“I could really sit down and start imagining where I was. In the second chapter, where she is sitting on the grass and is waiting for her American friend, I could imagine her sitting where I was sitting and anything like that.”

“When you’re reading a book, it’s sometime hard to imagine a place, but with this sort of idea, it’s great, you can really get the feeling of the place. A good idea!”

“Especially the second chapter, when you look up at the dirt track that is coming down, it feels like you are exactly in the story itself and you are seeing what the character is seeing.”

However, it was anticipated that this concept might also have negative effects on the immersion and the ability to focus on the story, due to distracting factors such as noises and moving objects around the reader. This was only partly confirmed. Some students in the second user study (CLMS) remarked that moving people and noises in the city drew away their attention. The remaining users basically described all the same experiences. While they were reading they almost became totally immersed in the story and did not really notice the real world and what was going on around them. But when they finished a chapter and went to the next location, obviously they returned to the real world and perceived their environment. The fact that they were using GPS technology to find the next spot was an additional aspect that drew them back to reality. One participant also highlighted the fact that there was “some immersion (*while reading*), but probably also a mix of real world and story world”, which was caused by the references referring to the landscape and surrounding. Interestingly, one reader also described the breaks between the chapters in which the user had to walk to the next location as being a positive effect. While walking “you were always wondering what the next chapter would be” and so the excitement for the next chapter was increased.

The *Narrative Map*’s purpose is not only for the entertainment of users, but rather to deliver knowledge and awareness of a particular area. One positive effect for this was that users found the way information was presented more interesting than normal information about buildings and places, and they were curious about finding out more about the featured locations:

“I liked that because it really does set the scene a lot more, rather than just information about a building.”

“If you were from another country, I would imagine it might give you a sense of being somewhere different and know a bit more about it. Everybody likes to know a little bit of unique information about the place they are in, so that it’s not just another dwelling or another home, but there’s a history associated with it.”

In addition, most participants mentioned that the *Narrative Map* helped them to get to know the area. Especially interesting was the fact that even people who had known the area very well before, did learn new bits of information:

“Because it was good to see the different sides, a different time, the past and to be in the present place, and see a different side of it, which was interesting.”

“For an area I have been coming to for years, there are a lot of things I did not know. [...] Yes, it really does make you stop and think like a tourist in your hometown. It’s really great!”

“Not only did I get literature from it, but also I got an idea of West End better.”

“It certainly gives it another dimension. It gives you a sense of place and history.”

However, especially in the study with the students, several disadvantages and suggestions for improvements were mentioned. The majority of the students would have preferred an audio version of the story, instead of simple text they had to read. One group of students also mentioned that this way of reading “disjoins it a little bit”. They complained about the interruptions caused by the walks, and suggested having a continuous text while walking around. The participants also suggested a reason for the slightly more negative experience at CLMS: the path that users had to follow was not a circuit, but they had to “go from here up there to here up there” (see Figure 3-6b); participants felt annoyed to some extent, and obviously the motivation and excitement decreased.

Another negatively experienced implication of location restrictions was that readers were exposed to external influences, such as unfavourable weather. For example, at times users had to cover the display with their hands, as the sunlight was disturbing. Regarding this, several comments were made during the interview:

“I [...] had to sit in the sun on the steps, which was annoying.”

“But just from a practical perspective, I was getting a bit warm on the steps at A block.”

However, the restrictions were only for accessing the information, not for consuming it. That means that users only had to be at the location to retrieve the chapter, but could have moved afterwards to a more appropriate place, e.g. a shaded area close to the location. One participant was observed doing this. After the chapter was received, the user went to a shaded area, and was pleased that the chapter was still readable at that location. This reaction showed that users were not aware of how the restriction worked and that they were probably afraid that the text would disappear if they moved too far. Another important aspect regarding the

accessibility for all kinds of readers was the issue that not all locations had a place to sit. Sometimes readers were expected to read while standing or sitting on the ground. This might not be appropriate for aged or handicapped readers, and so one participant suggested including a note “there are no seats here” to draw attention to this problem in advance.

An interesting incident related to the aforementioned idea of integrating events in the environment happened during the trial: while one student group in Cooroy was reading a chapter about a dance in front of the Memorial Hall, some music started to be played from inside. The students were excited, as this intensified their experience. A similar incident happened at KGUV I:

“In one part in the story, one of the girls is telling a soldier that she is pregnant, and so I was reading that bit, and on the stairs next to me two students were actually having a conversation, that one of their friends had just found out that she was pregnant. So it was really tricky!”

At WELM, one participant also mentioned that these narrative pieces raised interest in him, and it “makes you want to investigate further”. This interest went so far, that this participant actually went into one of the bookstores, which was part of the trail, and bought a copy of one of the stories mentioned in the *Narrative Map*.

4.3.2 Time-restricted information access

Restricting the time on information access leads only to a temporary chance for users to retrieve the desired piece of information. In the *Mobile Narrative*, the individual chapters were arranged with time restrictions, and so chapters could only be accessed between a specified start and end time. The times did not include any specific dates, which means that chapters were accessible every day within the specified time frame. These time restrictions were only used in the second user study in Kelvin Grove (KGUV II). The story used in this trial was set in the morning, and so participants had to read the chapters between 9.30am and 10.35am (cf. section 3.3.3).

Since the restrictions were only used in this one user study, the results from the survey only provide preliminary data. However, those responses already show that the opinions about the time restrictions were divided. One half of the participants experienced the restrictions as positive and exciting, and they were not annoyed by the requirement to read the chapters at a certain time. The other half did not see a good reason for reading at the specified times, and found the requirements as unnecessary.

The feedback collected in the interviews was in line with the survey results. One group of users enjoyed this aspect of the reading experience. Positive feedback was given when the story and its references to time matched with the experience the readers had. The story, for instance, starts with the sentence “Sitting between the barracks, squinting in the morning sun (as you might be), David Wiggum was struggling to roll a cigarette.” As the weather during the trials was good, and it was already warm and sunny in the morning, several readers highlighted this reference and noted that they liked this connection to the real world:

*“The first reference to the time about the sun in the morning, that was cool.
[...] That was the best thing.”*

"I think it's good, because I actually felt the sun."

This feedback was obviously dependent on the weather conditions during the trial. If it had rained during the days the participants were walking around, the responses would most likely have been completely different. Another participant also noted this:

"I think on a day like today, when it would be kind of parallel with what was happening today weather-wise, you get more of a feel for the setting. It makes sense. It probably would be hard in different situations, like a night-time story or things like that."

"Depicting the earlier use of the site, the barracks in summer decades ago while still active. Quite easy to imagine while at the site and on a warm sunny morning like today!" (Comment submitted during trial by the same participant)

But there were also several critical voices from another user group. The negative feedback ranged from participants that did not see a reason for the time restrictions, to users that were really annoyed by being forced to be at certain places at certain times. The following extracts from the interviews show comments that criticize the necessity and relation of the time restrictions:

"No real reason at all for the particular times. It could have been 1pm, it would have been more appropriate if it had been dusk, because chapter two was set when she was waiting for classes, wasn't it?"

"It's all in the morning, but it could also be played in the evening or the afternoon, so there's no real need for the time in the morning."

These statements partly explain the negative experience some readers had. Apparently, the time restrictions and the story did not work together well enough. The story did not succeed in interweaving the story with relevant time references that would have made it more reasonable to read it at a certain time. But it also shows that it is difficult to build a story that is using time constraints. The reading phase of the user study was estimated to take 45 minutes to one hour, and so a story that would really benefit from reading at the specified times would need to happen within this limited time frame; in this case, the whole plot would have needed to be in the morning. There are already prominent examples that successfully develop stories with time constraints. "24" is a television series¹⁹ with real-time elements. Each one-hour episode covers one hour of the character's life, and thereby the viewers follow the main character through a whole day by watching 24 episodes. This is still a new concept, and writers especially are not familiar with this kind of storytelling. The story utilized in the study jumps at some point from morning to afternoon, whereas the reader still reads it in the morning. This kind of disconnection is unfavourable for the reading experience.

Another effect of the time restrictions is that readers have to read the chapters in a row without any real interruption or stopping, as otherwise the next chapter might be missed. One participant complained about this as follows:

¹⁹ <http://www.fox.com/24/>

“[...] Was rushing to get to those places, which was annoying. And I really wanted to get a drink, and I couldn't until the end. So if you could do like 'pause', I am getting a drink, so it's like 'pause for 5 minutes', that's all we need to have. Because I got a phone call, I would not exactly read the book, and then I run out of time. So a pause feature would be kind of necessary.”

In contrast, another participant highlighted this as a positive factor, as it requires the reader to concentrate on the story, and does not allow much space for distractive behaviour:

“I also like chapters being available only for a certain time. It was kind of fitting in how the story progressed. [...] It keeps you focused, it keeps you moving. But also having enough time to go through the stage you're at. Because I was reading fairly quickly, but I could also go back and go through it all, because I knew that the next chapter might not be available for five minutes.”

Some participants mentioned that they were reading quickly, and so they had to wait for the next chapter. In this respect, it was also mentioned that due to this waiting time and the fact that the chapter was not available immediately, the excitement and interest for the next part of the story rose. Readers wanted “to get the next thing happening in the story” and were eager to get to the next location.

As illustrated, the feedback for this kind of restriction was divided. However, some participants who experienced it as negative did not find it totally senseless. One participant, for instance, stated that it might be better “for a different story” with “better time references”. Another said that reading “all the chapters after each other, that's cool”, but did not see any evidence to do it at 9am in the morning. The latter suggests to experiment with two different kinds of time restrictions on information access. First, there could be restrictions that specify exact times, as done in this study. Second, there could be time restrictions forcing people to read everything within a certain time frame. This would keep the readers focused and moving, as a user stated, but would also give readers the chance to decide when to start reading the story.

4.3.3 Location-restricted content submission

The contribution of content was enabled in the last three studies (CLMS, KGUV II, WELM) by allowing users to submit comments for each chapter. In the first of those three studies, users were simply asked to submit any feedback or comments they like. In the following two trials, for each chapter a question was posed in order to provide users with an idea of what they could write about.

There were two surveys that included parts relating to commenting on the spot. It was integrated at KGUVII as well as in the survey of the West End based study. However, the survey at KGUV II did not separately ask for the influences of location and time restrictions for comments, but integrated both aspects in the questions, such as “Being able to comment only in situ and within a certain time frame positively influences the comments, as everything is still fresh in mind.” The WELM survey excluded the time restrictions (i.e. the “and within a certain time frame” part). But basically, both surveys had the same aims, namely the exploration of whether being on the spot supported or helped writing comments. Thus, the

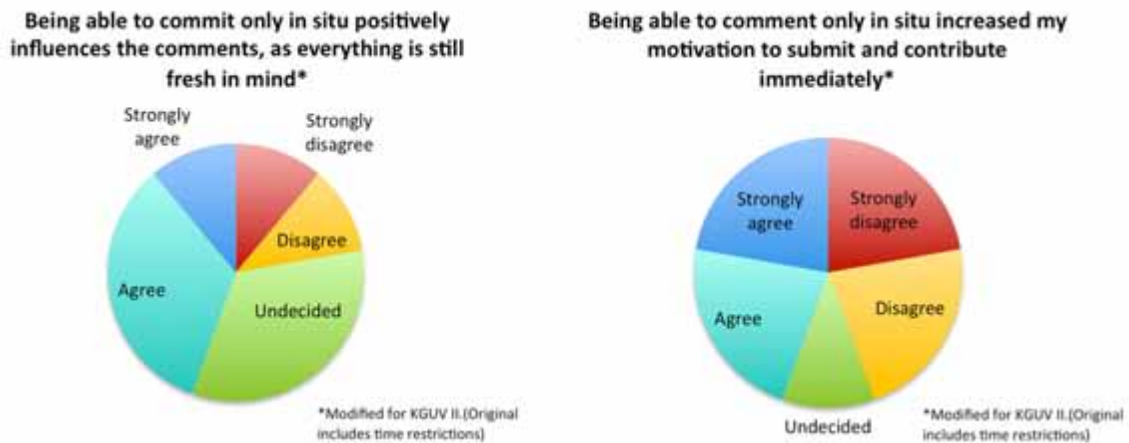


Figure 4-2. Users responses regarding commenting on the spot

results of those surveys were aggregated in Figure 4-2. In general, the outcomes indicate again a much more positive perception than the time restrictions in the previous section. One positive result was that only a small fraction ($\approx 22\%$) denied the fact that comment on the spot was useful as everything was still fresh in mind, whereas around 44% experienced this as beneficial. Another positive outcome was that it also motivated people to contribute. Even though there was a large group that did not feel motivated, the user group agreeing with the positive effects of it remained the same ($\approx 44\%$), and even shifted towards the strong agreement.

In the interviews, the slightly positive feedback was underlined, even though some initial difficulties could be observed. Despite the given instructions that included the hint that comments were only possible in situ, several participants had problems with these restrictions in the beginning:

“You actually have to be at the spot to submit it, we did not know that, and did not go back.”

“Because we did not know that we had to stay there, we walked away and tried to submit the Chinese one half-way down to here.”

“But we wanted to keep going because we were conscious of time. So when I was walking along and waiting for the lights, I then wanted to do the Greek Club but I couldn’t, because I was too far away from the spot.”

This shows that restricting the contribution needs to be clearly indicated within the application. In the first two studies, this was not really done. For the West End user study, the comments section was only reachable after reading a chapter. Since it was obvious for users that they can only read the chapters on the spot, it was anticipated that users would realize that also commenting is only possible when they are at the specified location. However, the third of the previously mentioned statements is from the West End user study. The fact that it is still not clear for users shows the demand for clear instructions in order to successfully employ these kind of constraints.

Also, after the initial obstacles some users were still not convinced. There were basically two groups of arguments against the location restrictions for content contribution: (1) some participants mentioned that they would have liked to explore the walks between the locations for writing comments; (2) others claimed that they needed more time to think about their comments. The first group suggested ways how the contribution of content should work, without real arguments against the location restrictions, which can be seen in the following quotes:

“It’s good having the story saying actually that you have to go there, you can’t just read it on the way, but I reckon you should be able to comment anyway.”

“Maybe you can comment while you are walking. We are sending text messages all the time when we are walking.”

“Maybe if we had the options to do it ‘post’. Maybe not before you have read it, but post at anytime.”

The second group, however, made a good case against the restrictions. Several participants demanded more time for the content creation. They did not want to submit imprudent contributions:

“People think differently. If I think about something, I like to think about it for a few hours, and would like to comment then.”

“If I had a further thought, the comments would have been better. I just mean, because of the time and pace, I had to comment very quickly, so it’s just my first impression, the first thing that came to my mind.”

“That’s it; I like to reflect a bit before I put anything down, rather than on the spot.”

Interestingly, it can be observed that a lot of people do not value their immediate ideas and thoughts. Responses and contributions are only considered valuable if they are elaborated and thoroughly reflected. It does not cross these participants’ minds that immediate feedback might also be highly beneficial. Only one of the users who asked for more time to come up with elaborated content also saw this point, stating “sometimes the spontaneous things are good too, isn’t it?”

On the other hand, a lot of participants saw the benefits of location restricted information contribution. Around 57% of the individually interviewed participants that had commented saw this concept as favourable, and mainly three main aspects were pointed out: (1) increased motivation; (2) fresh memories; (3) more detailed contributions.

Most supporters (=80%) of this concept mentioned the first point in their feedback. Only by allowing the submission of comments at the specified places were people motivated and encouraged to contribute, mainly because it did not allow any procrastination. If it was allowed to be submitted at a later time, it would probably lead to them thinking “not now, maybe later, probably not at all”. The following responses were some of the ones collected regarding the motivation:

“I think if you are going to make them comment at all, better make them comment on the spot, while they are having the experience. Otherwise it just becomes something else on their to-do list, like ‘oh yes, I will comment later’.”

“Yes, very definitely. You could put it off, like you say, and then never get round to it. But if do it there and then, that’s good, for me anyway. [...] Like if I had to wait until I got home, I probably would not do it. No I think it’s good to do it on the spot.”

“I think people are lazy. [...] If I had been asked to do it later, it would have been like ‘yes, yes, I will get around to that’, ‘guilt, guilt, why haven’t I done it yet’, ‘oh tomorrow’. So yes, if it is required, there and then is much better.”

Another advantage of contributing on the spot was the fact that memories were fresh. Participants found it easier to add their content because they had just read the chapters and everything was still present in their minds. Furthermore, users had only to deal with a smaller amount of information, and thereby found it easier to respond:

“It was fresh in your mind, what you just read and saw, so it was easier than doing the whole circuit and coming back and commenting, because you already knew what were going to comment about.”

“I am just dealing with the small chunk of information I got, so it’s easier to respond to, and maybe clarify thoughts about what was going on in the story, or the experience of it.”

“If you ask me to comment on some things this afternoon, I will probably give very different answers, and especially without having the text and the site on hand to refer to. I think it is beneficial to do it there and then, instead of doing it at a later time.”

“I would rather do it on the spot, because then it’s fresh in my mind. If I got home, I maybe would not have the same spontaneous feeling. So I think it’s better to comment on the spot.”

But the act of commenting on the spot did not only make the act itself easier and more probable, but also contributed to a different quality. Even though participants feared, as mentioned before, that they could not provide elaborated responses, it was observed that contributing in situ could also improve the quality. Participants were able to integrate more details, since they were still seeing the place and feeling the atmosphere:

“You are actually there, you are looking, you are thinking, you are hearing, and you are using your senses. So in that respect probably. You might not have engaged all those sense at home, but just relied on your memory.”

“You might think a little bit more about the location, and you might be therefore tempted to write more considered comments.”

Another participant highlighted that the importance of being on the spot differs depending on the location and the kind of contribution. He differentiated between “preformed” opinions and

those that were not yet formed. For places that he had visited several times before, or that he already knew and had an opinion about, it was not really beneficial to comment on the spot. In those cases, the contribution “would have been the same” is true, regardless of whether it would have been committed in situ or not. Whereas for locations that are not already associated with a formed opinion, it would be advantageous indeed. This participant, for instance, mentions the Greek Club at WELM, and states that writing on the spot like this leads to “engaging more senses and less opinion”.

Overall, the findings show that these location restrictions can be utilized for several purposes. It can foster motivation and persuade users to contribute. But apart from that, it can be used to get better or different contributions. First, constraining the location where content can be generated can be exploited for collecting first impressions or thoughts rather than elaborated and thought through responses. Users stated that they “put in the first thing that came to my head”, which might be useful for specific purposes as well. Second, it helps to improve the quality of contributions that are greatly related to the location. Due to the physical proximity, users are able to give more detailed and specific responses. However, as mentioned before, this holds true especially for places where participants do not yet have a preformed opinion.

4.3.4 Time-restricted content submission

In addition to the time restrictions of the individual chapter in the second user study in Kelvin Grove (KGUV II), the submission of generated content was also only available temporarily. Users were only allowed to submit comments shortly after they read the chapter, and the effects of this were explored. Further, participants at WELM were also asked in the interviews about possible time restrictions regarding their contribution, even though they experienced size and location constraints only.

The survey, which was given to the participants after the study, did not include any separate questions regarding those time constraints, but only assessments for place and time restrictions together (cf. section 4.3.3). Thus, the findings indicated in Figure 4-2 can partly be adopted here, since time restrictions also forced people to comment immediately and while everything was still fresh in the mind.

One of the suggestions that came up while exploring the location restrictions for content contribution was that people would have liked to “write and walk”, and use the time they spent on walking to the next location to write comments. Several suggestions like the following were made:

“I was trying to write and walk. Then I found that the technology would not allow me, I had to go back to the address, within a certain radius. I found that a bit frustrating.”

“But you don’t need to be at that location, you can say you need to submit your comment before you start reading the next chapter.”

These problems or suggestions are basically resolved and integrated by using time constraints, but brought up new concerns. Users were afraid of the time pressure imposed by this kind of restriction:

“No, I would not like that, I think. Then I would get nervous and would think ‘I have to hurry’ and maybe not do it properly.”

“If I was having any technical difficulties, I would be stuck like ‘ah, what am I going to do.’ Or [...] ‘ah, I am running out of time.’ But mostly, it would motivate me to get it done.”

This fear was not groundless. One participant was indeed not able to submit any comments because he ran out of time. An external interruption was causing him some delay; he was then only able to read the chapter, but could not submit anything afterwards.

However, as already indicated in the second comment, the time pressure also had some influence on the motivation. It prompted users to be active and submit their content immediately:

“If I had loads of things to do, and if I had twenty minutes to go or two weeks to go, I am less likely to do it at the spot.”

“Oh yes, time is of the essence. I think you are probably more likely to get feedback but making it part of the actual tour. But I think people would probably resist being compelled to do too much. Maybe there ought to be an option of multiple choice as well.”

“It would motivate me to do it immediately.”

The findings indicate that time restrictions for the contribution of content can work. However, in order to successfully employ those constraints, it is important to establish a good balance between providing enough time so that users are able to contribute, but also creating time pressure for motivation. In the conducted user study, the time frame might have been too short, as participants that were willing to contribute were not able to. Neither should the time frame be too large, as it might take away the stimulus and incentive for contributing. If it is desired to implement these restrictions, the time frame probably needs to be determined by more intensive studies with a larger scope.

4.3.5 Size-constrained content submission

The last restrictions that were tested were limiting the size of user-generated contributions. In the same manner as various micro-blogging services, such as Twitter, restrict the length of possible inputs, comments were limited to 140 character only. If users exceeded this limit, the comments could not be submitted. These restrictions were only explored in the last user study at West End.

The survey results are again only of limited significance, due to the fact that these constraints were only used once. However, they indicate a trend in the user experience. Even though there was no clear trend visible as to whether size constraints positively influenced contributions, either by relieving users from the burden to write long texts or by indicating that short comments are also valuable, none of the participants experienced those restrictions as annoying or unnecessary.

In the interviews, only a slightly more positive stance on the size constraints could be observed. Interestingly, no real rejection was visible for those restrictions. Basically two kinds of responses were given. One group of participants did not really see any benefits, but neither did they really feel restricted. Even though they were told in the instruction session, they only noticed the constraints when they exceeded the limit:

“For me, I did not think about the restriction, until I went over it. [...] So it was only in one case where I had more to say. But apart from that, I did not think about it.”

“That’s what I did as well. If I had more to say, I would be like ‘arrh’.”

Possible reasons for the users being unaware of the constraints could be that either the limit chosen was too high, i.e. too much text was allowed, or the indication of the constraint was not prominent enough. One user said, “140 characters, that’s quite a lot, isn’t it?” which supports the former option. Yet the first reason seems unlikely, since participants indeed exceed the limit. So if participants really had to say something, the limit did in fact restrict them as intended. Another possibility was that people were just not aware of the constraint. By showing an indication of how many characters were left just above the inserted text, it was hoped that users would then be made aware of the limited input. The number dynamically changed while users were writing, and so chances were high that they noticed it. A fact that could have contributed to the users being unaware of the character constraint could be that many participants were using an iPhone for the first time. They might have been too preoccupied with writing the comment on the on-screen keyboard to have noticed the character counter above the text.

The second group of participants and the majority in this study (=60%) did think that this limitation of possible input was good. The following comments show that this might help to persuade users that only a small amount of input and effort is required, since they can only write a short comment anyway. The quality might also improve, since users have to think about what to say:

“Yes, that’s good. It’s good to know that you are only requested to write something short. So yes, it probably unconsciously relieved me from that burden. I don’t twitter, but that’s about the same word length, isn’t it? So I suppose it would work for people that sort of quickly twitter.”

“In a way, I think it’s good. Otherwise you could get carried away and write pages. But if you are out in the streets like that, you don’t want to write a book yourself, do you? You just want to keep it short and to the point.”

“Oh yes. You know the parameters, and therefore you have to think a bit more about what you want to write. If you really want to convey something, then you have to choose your words carefully.”

The results for this kind of restriction differ slightly to the other previously presented outcomes. Participants were less opposed to this intrusion, but the effects were also less obvious and sometimes “unconsciously” influencing the comments.

4.3.6 General feedback on Mobile Narratives

The interviews and surveys also included questions that were not directly related to the exploration of restrictions and constraints in mobile services. They were not necessarily required for answering the research questions, but the aim was to get an idea about the users' technical literacy and their usage behaviour in respect of mobile services.

All participants that filled out the surveys were in possession of a mobile device, such as a mobile phone or a personal digital assistant. The majority ($\approx 57\%$) used their mobile phone only for calling or texting other people. Additional functionality was only exploited by about 43%, with the calendar, the alarm clock, and the Internet browser being the most popular ones. Since many mobile services require an Internet connection in order to provide the requested information, participants were also asked whether they were able to connect to the Internet, and how often they do this. Again, about 57% of the participants had an Internet-enabled mobile device; however, this group was not congruent with the previously mentioned group of users using additional functionality of their devices. Interestingly, despite the large group of possible mobile Internet users, over 71% said that they never use the mobile Internet. The remaining users requested several times per week, or even on a daily basis, online information from their mobile device.

Furthermore, participants were asked how they experienced reading from a mobile device in general, regardless of the imposed restrictions. Overall, participants enjoyed the reading experience, though mostly with reservations. The general feedback was that they liked it in the presented scope and for such a special purpose, but for normal reading activities with longer texts they would prefer normal books:

"I wouldn't do it all the time though, but for this particular thing it was great. In bed I wouldn't want to read."

"Small passages are fine. I don't mind reading my horoscope on a telephone, but if I'm going to do a study in astrology, then I'd like to get the books. Something small is fine, something big no way."

General problems were the contrast, especially in sunny spots, and the small and inadaptably character size of the developed system. Other participants mentioned that "with a book you can read more information at once, and you have a contextual setting. You are constantly flicking backwards and forwards, going up and down the page." Despite those reservations, almost all participants gave positive feedback, and were pleased and sometimes surprised how enjoyable reading from a mobile device can be. Three main advantages were mainly mentioned. First, people found it very easy and comfortable to use:

"It was just easier to simply scroll down."

"It's easier to navigate via a digital device than a physical device."

"Because it's handy. It's not fighting the wind. It's just easier."

Second, people enjoyed the portability of the device. Participants stated that it is "small, and compact, and efficient" and "easy to carry, easier than a book".

Third, readers were also excited because of the novelty of this kind of reading. None of the participants had read in this way before, and so they all experienced a new reading format:

“Maybe because of the novelty of it for me, I actually paid more attention and read it more thoroughly than if it was on paper [...].”

“I think it’s the novelty of doing it. It’s something different. It’s the novelty you enjoy.”

In addition to the reading experience, participants were also asked about the writing experience, i.e. how they experienced writing comments on the mobile phone. In the survey, users had to state if they found writing on the mobile phone cumbersome. The feedback of this was very mixed. One third agreed that it was bulky; around 44% did not experience it as negative. The interviews provided a similar result. Responses were ranging from “Good, it was okay” to participants that had real difficulties with writing on the go, and only submitted “fundamental” comments with “probably heaps of spelling mistakes” due to this. This was obviously also reflected in the submitted comments. Some participants did only respond with a few words stating an idea or thought, while others wrote down their thoughts in a detailed manner:

“There will be misunderstandings, false allegations, and David may get violent. Margaret should clear this up before it gets out of hand, although it may already be too late. Oh no!”

5 Technical Overview

This section addresses technical issues of the study and describes the technical realization of the prototypes for the user studies.

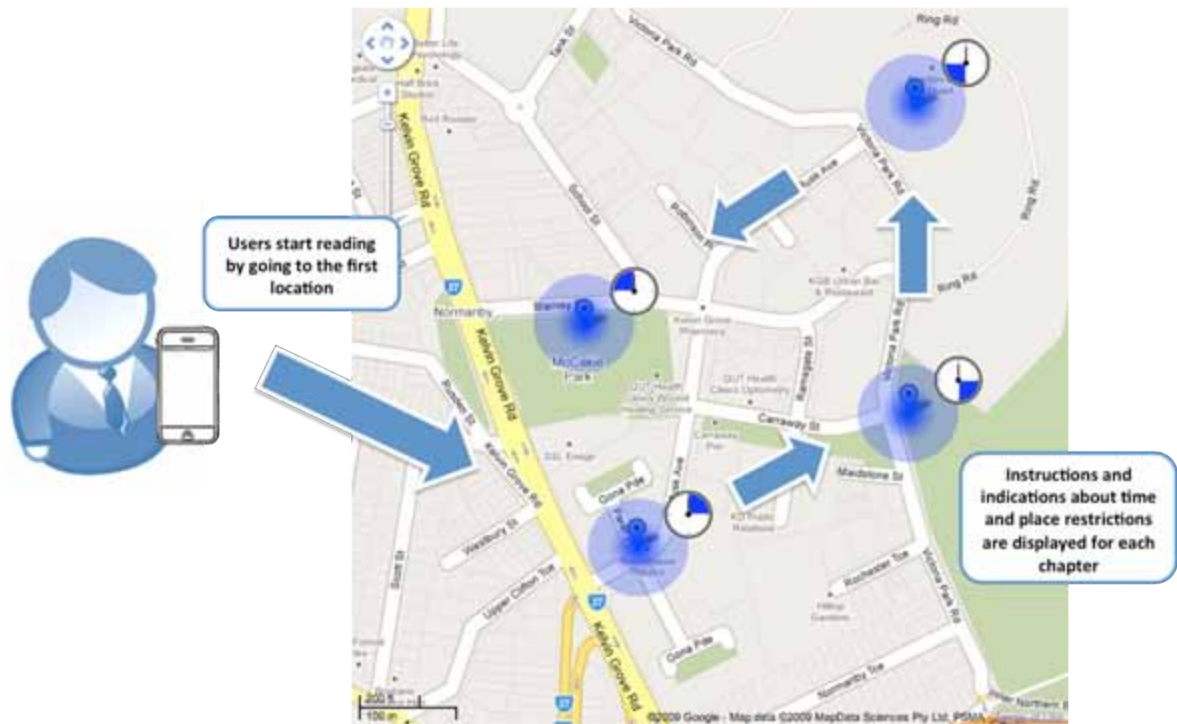


Figure 5-1. *Mobile Narrative* concept with indicated restrictions

As two different concepts were explored, also two different systems were developed. The *Mobile Narrative* was used for the first three trials in Kelvin Grove Urban Village (KGUV I+II) and at Cooroy Lower Mill Site (CLMS) (cf. section 3.3). Therefore, an application was utilized that guided the users along a specified path in order to experience the narrative. The concept is sketched in Figure 5-1. Users get instructions about where and when they have to read the chapters. If they meet the restrictions, e.g. if they are at the specified place, they are able to retrieve the associated content. For the user study at West End (WELM), the concept was slightly adapted towards a *Narrative Map*. It allows users to stroll through the city without any specified route, so the individual chapters could be read in any order. Even though the concepts differed only to a small extent, the requirements for the individual implementations were different, thus two different systems were needed.

In section 5.1, background information about general technological aspects of the two implementations is given. Technology and hardware utilized in both systems is described, as well as employed services. Subsequently, both systems are described in detail.

5.1 Integrated Services & Technology

This section gives an overview of employed services and hardware, and provides background information about utilized technology. Both systems have in common that they are implemented following the client-server concept (Jing/Helal/Elmagarmid 1999). The mobile client requests information from a server, and the server sends the requested data in its response. Thus, both sides also need to be taken into account in this section.

The client sides of both, the *Mobile Narrative* and the *Narrative Map* were implemented as iPhone applications, thus section 5.1.1 introduces device characteristics as well as development specifics. Another common aspect of the developed clients is the location-awareness, in this case realized by using the Global Positioning System (GPS) (cf. section 5.1.2), as well as the utilization of maps to support the users with their navigation (cf. section 5.1.3). Finally, the server side is looked upon. For the web application development, the Google App Engine platform was employed, and so an overview of this service is given in section 5.1.4

5.1.1 iPhone

The iPhone is an Internet enabled Smartphone produced by Apple (Apple Inc. 2009). It compromises the functionalities of a mobile phone, an Internet device, and a multimedia device. For this project, the iPhone 3G - the second iPhone generation - was used. This model is, among others, equipped with a camera, a multi-touch display, three-axis accelerometer, proximity sensor, ambient light sensor, tri-band UTMS/HSDPA, quad-band GSM/Edge, Wi-Fi, and Bluetooth. Moreover, it provides location sensing via assisted GPS (cf. section 5.1.2), Wi-Fi, and via the cellular network (Apple Inc. 2009).

Furthermore, it allows third party developers to build web applications as well as native iPhone applications. Users can then download the latter via an application portal, the so-called *iTunes App Store*. The software runs on a proprietary operating system specifically developed for the iPhone (*iPhone OS*). On top of a Mach kernel, a similar one is found in Mac OS X, several service layers are implemented, such as Core OS, Core Services, Media, and Cocoa Touch. The latter is the highest layer, and includes the Foundation framework which provides a set of primitive object classes, file management, and network operation support, as well as the UIKit, which includes support for all kinds of visual elements of an application. In this layer, mainly Objective-C, an object-oriented language is used, whereas in lower layers C-based implementations are found.

The Software Development Kit (SDK) includes the required tools for developing those applications. It includes Xcode, an integrated development environment for developing native applications, as well as an Interface Builder, which supports the interface creation. In addition, the iPhone Simulator provides the means to test the developed applications virtually before installing them on a real device.

5.1.2 Global Positioning System

As mentioned in the previous paragraph, the *Mobile Narrative* was realized as a native iPhone application for the iPhone 3G. This model includes a GPS receiver, which was exploited to determine the user's position while using the application. The Global Positioning System

(GPS) is a U.S.-owned system of satellites that provides positioning, navigation and timing services (National Executive Committee for Space-Based PNT 2009). Positioning information is delivered as a three-dimensional location, consisting of latitude, longitude and altitude, and for navigational purposes, the velocity, i.e. speed and direction, can be retrieved. Originally built up as a system for military purposes, it is now also available for civilian users.

The GPS satellites continuously broadcast a variety of information, including their position and the time. The GPS receiver then translates this data into position, velocity, and time information. GPS exploits transmission delays for positioning. Therefore, signals from at least four satellites are required. The receiver can determine how far from the satellite it is situated by measuring the time it takes for the signal to travel. As already pointed out, these signals include the positions of the satellites, and so the receiver knows that it is on a sphere with the measured distance away from the satellites. Combining three signals leads to two intersections of these spheres of possible locations, whereas one is typically on earth and one is not. The fourth signal is required to synchronize the clocks in the satellites, as precise signal transmission and reception times are absolutely vital for accurately determining the position. Satellites include an atomic clock, which is however not feasible for GPS receivers. By using the signal of a fourth satellite, it can determine the time through calculation (National Oceanic and Atmospheric Administration 2009).

Transmitted signals mainly consist of three different kinds of information: (1) a pseudo-random code; (2) almanac data; (3) ephemeris data. The pseudo-random code is an identification code that informs the receiver which satellite is transmitting information. The almanac data contains information about the whole system. It describes the orbital course of all satellites. With this information, the receiver knows which satellites are supposed to be visible and should be tracked. The almanac is not very precise and is typically valid for several months. The ephemeris data includes information about the precise location of the transmitting satellite, and is only valid for a couple of hours. In order to determine the position, velocity and time (PVT), the receiver starts searching for satellites based on the almanac data. If the expected satellites are found, the receiver tries to collect ephemeris data. If this data is available, an accurate PVT solution can be calculated. The time it takes for a first solution to be obtained is called *Time To First Fix* (TTFF). This time varies enormously, and depends on which information already exists and is still valid. If neither almanac nor ephemeris up-to-date, this information has to be downloaded first, which extends the initial time considerably.

Assisted GPS (A-GPS) aims on reducing the TTFF. Even though there is no unambiguous definition of the term “assisted GPS”, it is typically used for overcoming the problems associated with obtaining almanac and ephemeris data from the satellites by providing this information via the mobile phone network from an assistance server. The server could also approximate a location derived from cell phone towers. Receivers download the information about the satellites via the Internet, and thus are able to quickly come up with a position. The iPhone 3G also uses assisted GPS; however, no precise information about their implementation of A-GPS is provided (Apple Inc. 2009).

5.1.3 Maps

In both developed prototypes, maps were used as an essential part of the client's user interface. The *Mobile Narrative* application used it to support users in finding the location of the next chapter. There were textual instructions where the readers had to go, but if people were unfamiliar with the area or if the instructions were not precise enough then the map helped out by pointing to the specified location. The *Narrative Map* application used it as its main interface element. The individual points of interest were shown on the map and, in order to read the narratives associated with these locations, users had to tap on the marker on the map.

The map within the application was realized with the *MapKit*. MapKit is a framework provided by the iPhone SDK for embeddable map interfaces. It is based on Google Maps²⁰, an online navigation and mapping service. Google Maps provides street maps, route planning functionality, as well as a search for nearby businesses. These services are not only available on the Google Map website, but can also be integrated into personal homepages or third-party web applications, which is one of the reasons why it is currently ubiquitously found in the online world.

Due to this fact, the MapKit was selected. It provides a familiar user interface that most people are already accustomed to from using it online. The user interaction is also very similar and allows users to zoom and pan the map, using typical multi-touch gestures on the iPhone. Developers can add their own annotations to the map, and thereby display customized information on it, which was also needed for both systems.

5.1.4 Google App Engine

For the web development, Google App Engine²¹, a service that provides a platform for developing and hosting web applications, was used. It is based on cloud computing technology. Buyya et al. (2009, 599-616) define a cloud as follows: "A Cloud is a type of parallel and distributed system consisting of a collection of inter-connected and virtualized computers that are dynamically provisioned and presented as one or more unified computing resource(s) based on service-level agreements, established through negotiation between the service provider and consumers." Web applications in the application container are virtualized across Google's servers and data centres, and so are basically running on a distributed server that grows or shrinks with the actual traffic. Other common cloud computing services are Amazon Web Services²² or Microsoft Azure²³. Google App Engine includes a Java runtime environment,²⁴ and thereby allows writing web applications built with regular Java technologies, such as servlets. Servlets can be compared to "an applet that runs on the server side – without a face" (Sun Microsystems Inc. 2009), and are basically objects that process requests and construct responses.

²⁰ <http://maps.google.com/>

²¹ <http://code.google.com/appengine/docs/whatisgoogleappengine.html>

²² <http://aws.amazon.com/>

²³ <http://www.microsoft.com/azure/>

²⁴ Google App Engine also includes a Python Runtime Environment and related tools. However, as those were not used in this study, the description in this section focuses on the employed tools and aspects of Google App Engine.

In addition to the runtime environment, Google App Engine also comes with a data storage service (*Datastore*), which is also distributed and adapts to the actual usage. In contrast to traditional relational database systems, the *Datastore* stores data objects, which have a kind and properties. Transactions and a query engine are also provided. The latter allows performing queries over data objects “of the same kind, with filters and orders on property values and keys” (Google Inc. 2009). The storage can be addressed by using one of the two interfaces: the Java Data Objects (JDO) or the Java Persistence API (JPA). The former, which was used for the development of the applications in this project, includes a query interface called JDOQL (JDO Query Language). It is very similar to the Structured Query Language (SQL), a commonly used query and data manipulation language for relational database systems; however, it does not support SQL.

This service was selected for several reasons. First, it provides a quick and easy way to develop web applications. The Java programming language is currently one of the standards, and thus its support by the app engine reduces entrance barriers and allows a simplified entrance for a wide range of software developers. In addition, it provides convenient tools for the development. For instance, the Google plug-in for Eclipse²⁵ provides the deployment of web applications simply by pressing a button within the development environment. Second, this way of providing web applications does not require any server administration or hosting. The application only needs to be uploaded to the application container; all administration is done by Google. Third, as with the other cloud computing services, resources and bandwidth are dynamically adapted to the actual use, which provides an efficient way of application provision. The service provides 500 MB storage and as well as up to 5 million page views per month for free, and thus was ideal for the scope of this study.

5.2 Mobile Narrative

This section describes the technical implementation of the *Mobile Narrative* concept. As mentioned before, the concept was to develop a story that can only be read in situ, i.e. the reader has to go to the locations where the story takes place in order to be able to read it. Further, the concept also involved the chance for authors to release chapters only at certain times, as well as the opportunity for readers to submit own content via a feedback channel.

The aim was to realize this concept as an application running on a mobile phone. In this project, the iPhone platform was utilized for this purpose (cf. section 5.1.1), and so the system was built around a native iPhone application. As this was the main tested concept, several evolutions of the prototypes emerged (cf. section 5.2.4). The general architecture, which all developed versions have in common, is presented first, followed by more detailed descriptions about the individual parts of the system.

5.2.1 Architecture & Communication

The *Mobile Narrative* system consists of two main parts: a client and a server. The client, a mobile phone, is used to request the information and read the story. The server is responsible for storing the data and handling as well, as verifying and validating incoming requests. In the

²⁵ <http://www.eclipse.org/>

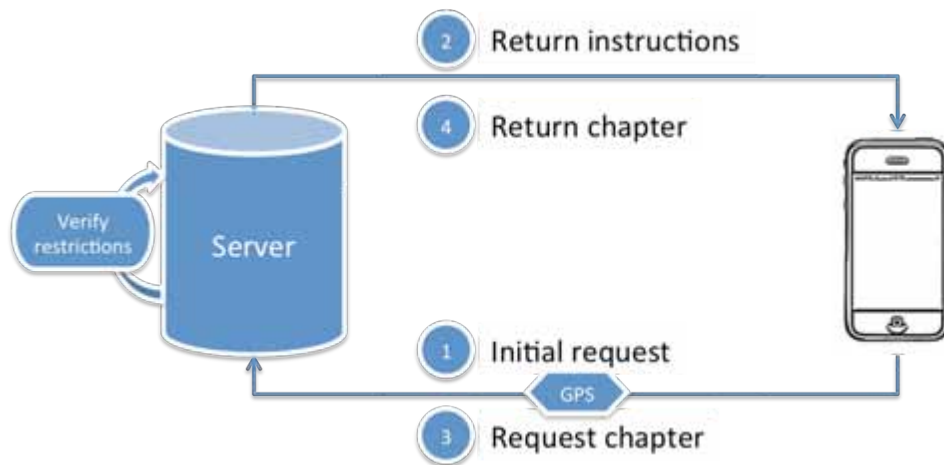


Figure 5-2. Communication flow in *Mobile Narrative* system

strict sense, the server itself consists of two entities, i.e. a web application handling the incoming requests as well as the responses, and the data storage, in which the information about the chapters is stored. However, for this architecture and communication overview these parts are considered as the “server”; in section 5.2.3, an in-depth description about the server is given.

The main communication flow between these two instances is shown in Figure 5-2. The retrieval process of a chapter consists of four steps. In the first step, the client sends an initial request to the server, indicating that he is going to read a chapter. This request is automatically submitted as soon as the user switches to another chapter. The server then responds by giving instructions that inform the client where to go in order to be able to read the story (Step 2). This response includes a textual description, as well as geographic information, i.e. latitude and longitude, which is displayed on a map. The reader then is supposed to follow the instructions and go to the specified location. When the reader arrives at the location, another request to the server needs to be sent, indicating that the reader is now at the specified location and ready to read (Step 3). This request has to be submitted manually by pressing a “Read” button. This manual step was integrated in order to allow users to take their time to find the correct place and sit down before the chapter appears. Attached to this request is the user’s current position, which is automatically determined by using the integrated GPS receiver. The server processes the incoming request and validates the user’s context, i.e. whether the request comes from the specified place and was sent at the correct time (if applied). In case of a successful validation, it returns the requested chapter (Step 4). In case of an unsuccessful validation, the server responds with a note about the restriction that was not met, and again provides the instructions for the chapter.

5.2.2 Mobile Client

The mobile client was iteratively improved after each study, and therefore several versions have been developed. The differences of these versions are highlighted in section 5.2.4, whereas in this section the latest implementation is described. The developed iPhone application is called *LiteraryTrail*, but is mainly referred to as *Mobile Narrative* application.



Figure 5-3. Screenshots of the application: (a) Reader tab (b) Map tab (c) Comment tab

It consists of three parts: the Reader tab (see Figure 5-3a) shows instructions for the user on where to read the chapter, as well as any other specified constraints. If the constraints are met, the reader can request and read the content of the chapter in this tab. If the chapter content is displayed, comments that have already been submitted by other users can be viewed. Additionally, it allows users to switch back and forth between the chapters. The Map tab displays the user's current position as well as that of the next chapter in order to facilitate navigation (see Figure 5-3b). Users can also zoom and pan the map if this is necessary for navigation. The third tab provides a feedback channel (see Figure 5-3c). Readers can submit comments, reviews or suggestions for each chapter. Authors have the opportunity to define questions for each chapter, which are then displayed just above the comment field. This enables authors to direct the feedback, and may help users by giving them a hint of what they could write about.

Users can switch between these three views all the time. The map and the comment tab are rather static from the interface perspective. Even though they adapt for each chapter and display the relevant information for it, both tabs mainly consist of the one view. The reader tab changes slightly, depending on the current state of the application (see Figure 5-4). In the beginning, some introductory information is shown. If the user stays in the reader section, instructions for the first chapter are displayed. By using the *Back/Next* buttons, the user can switch between the individual chapters. By pressing *Read*, the user retrieves the chapter.

The mentioned three views are also the main components of the client application. The *MainViewController* controls the reader tab, and all interactions occurring in this view. It is also responsible for sending the chapter requests to the server, and retrieving its responses. Besides, the main controller tracks the current location of the user, as this needs to be included in the chapter requests. The *MapViewController* is responsible for displaying the

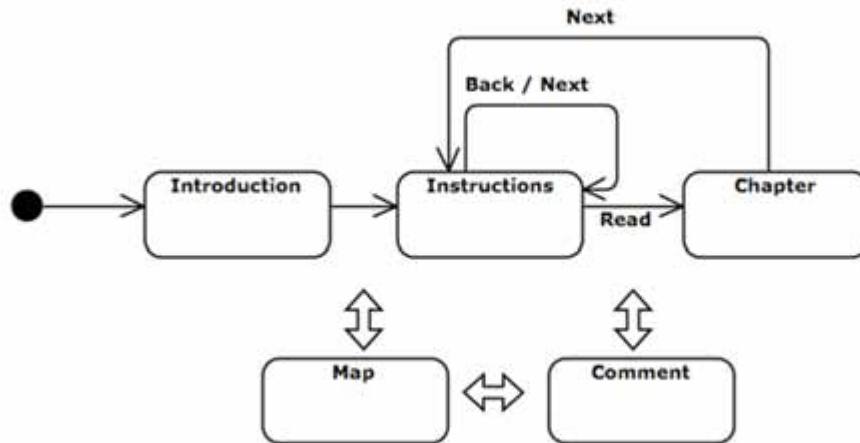


Figure 5-4. Screen flow of *Mobile Narrative* application

map and markers for the chapters, whereas the *CommentsViewController* handles all the interaction around the user feedback, including the submission of comments to the server. The three classes work mostly independently from each other. However, if the location changes or the *MainViewController* switches to another chapter, the other two controllers need to be informed in order to adapt the displayed content. This is done with the help of *NSNotification*. The *MapViewController* and the *CommentsViewController* add themselves as observers for the aforementioned events, and the main controller post notifications if one of those events occurs. Together with the notification, relevant information is delivered, such as an object with the new location or chapter contained.

5.2.3 Server

The server side of this system consists of several parts. There is the web application, which includes a servlet; this is basically a module written in Java that runs in a server application that handles incoming requests from the client, as well as providing a web interface for editing stored data or adding new entries. There is also the data storage part, which contains and persistently stores all required information.

LiteraryTrailServlet

The *LiteraryTrailServlet* is responsible for handling incoming requests from clients. A request consists of the following mandatory and optional parameters:

- *appName* (mandatory)
- *chapter* (optional)
- *mode* (optional)
- *place* (optional)
- *time* (optional)
- *latitude* (optional)
- *longitude* (optional)

The *appName* is the only mandatory parameter, and determines for which story the information is requested. Each story that is available in this web application has a unique identifier. The story for the first user study in Kelvin Grove for instance got “kguv” as its identifier, and so this token has to be included in every request. The other parameters are also optional, but decisive for the server’s response. The *chapter* parameter indicates for which chapter information is requested. Whether the server replies with the instructions for a chapter, or with the actual content of it, this is determined by the *mode* parameter. *Place* and *time* are switches with which the location and time restrictions can be set or unset. The *latitude* and *longitude* provide the geographical information about the request.

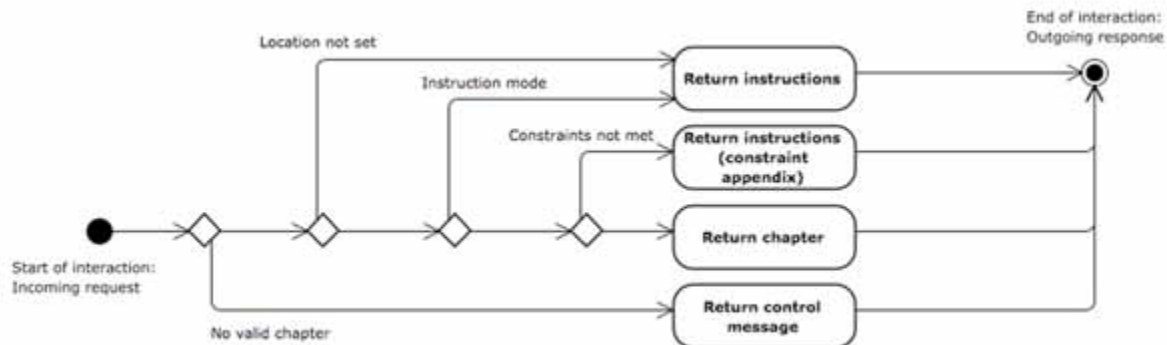


Figure 5-5. *LiteraryTrailServlet* responses

Depending on the provision of the individual parameters, the output is then determined, which is illustrated in Figure 5-5. The servlet may give one of four different responses. If the request does not include a valid chapter number, a control message is shown, which can be used to inform the reader about the concept and how to use it. The message of this content depends on the chapter parameter. If no chapter is set, initial instructions are shown, whereas a message indicating the end of the story is shown for invalid numbers. If a chapter is specified, and either no location is set or the instruction mode is activated, then the instructions for chapter are sent. However, if the location is set and the reading mode is activated, but the request does not meet the constraints (location/time), the instructions are amended by a note explaining why the chapter cannot be accessed (e.g. “You are too far away. Distance from location: 100m”). If the chapter is set and all constraints are consistent with the ones imposed by the chapter, then the actual chapter content is sent in the server response.

The time restrictions are simply checked. The servlet compares the time the request is received with the specified times for the requested chapter. The location restrictions require some calculation beforehand. The server receives the GPS coordinates from the client, and also knows the geographical location of the chapter. The distance between the two points is calculated with the haversine formula (Sinnott 1984, 158), which gives a relatively good approximation of the distance. Since the formula is not 100% correct due to the elliptic form of the planet, and in order to give the reader some freedom where to sit down and read the chapter, for each chapter a maximal distance from the specified position is defined. As soon as the reader is closer to the location than specified with the maximal distance, the chapter can be requested and read.

chapter	NO	LAT	LONG	DIST	TITLE	SUB	CON	CMT	QU	MTR
instructions	NO	LAT	LONG	DIST	TITLE	SUB	INSTR	CMT	QU	MTR
control	start/ end	TEXT								

NO: Chapter Number

LAT: Latitude

LONG: Longitude

DIST: Distance

TITLE: Chapter Title

SUB: Subtitle

CON: Content

INSTR: Instructions

CMT: Comments

QU: Question

MTR: Minutes To Read

TEXT: Information text

Figure 5-6. Communication protocol for possible server responses

The server response is bundled in a response packet, which applies to a specified protocol (see Figure 5-6). The size of the packet, i.e. the amount of different information slices, is determined by the first keyword, which indicates the type of response. Chapter and instructions contain the chapter number, specified position, maximal distance, as well as title and subtitle of the requested chapter. Further, both messages contain comments, questions specified by the authors, and a *Minute To Read* parameter that indicates the time limit if time restrictions are applied. The only difference is that a chapter response contains the actual chapter content, whereas an instruction message consequently delivers the corresponding instructions. Control messages simply contain a second keyword that indicates what kind of control message it is, as well as some text, which offers clues to this message.

Web Interface

The web interface allows the publishing and administrating of stories and related content. As this part was not actually used in the user studies, but only to facilitate quick and easy administration, the design of the web interface was intended to be simple and efficient. Two main functionalities are provided (see Figure 5-7a). The story content, i.e. the chapters, can be edited, and content created by users, i.e. comments, can be administrated.

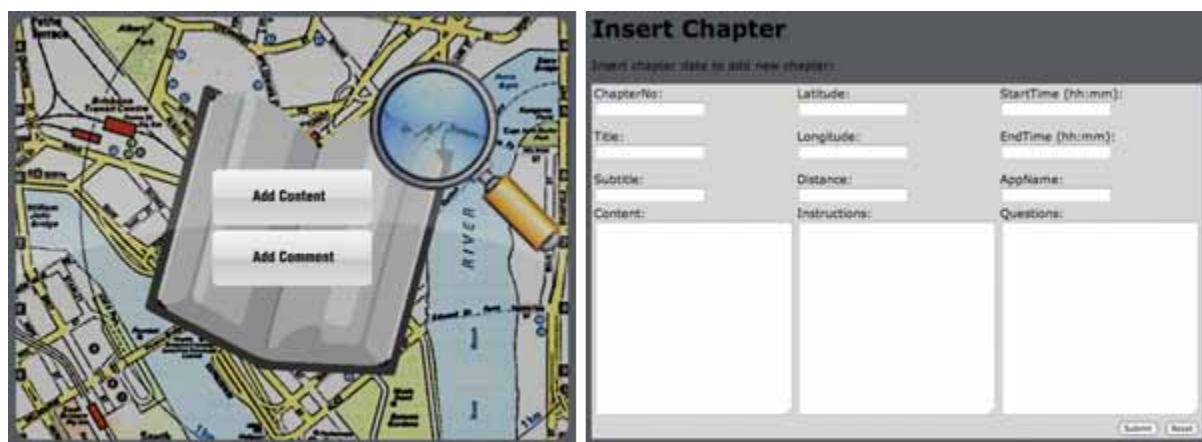


Figure 5-7. Screenshots of the web interface: (a) Home screen (b) Insert Chapter

The *AddContentServlet* is responsible for adding or removing chapters for stories. It provides an interface for adding content, which is illustrated in Figure 5-7b. All necessary information

for the chapters can be entered via this form. The *ChapterNo* specifies the position within a story, i.e. *ChapterNo*=2 creates the second chapter of a story. The location of a chapter is specified with *Latitude* and *Longitude*, and *Distance* defines the radius around this location in which the chapter will be retrievable. *StartTime* and *EndTime* allow setting a time restriction, and *AppName* denotes the affiliation to a story. All stories that belong to a story need to have the same *AppName*, e.g. for the first user study the token “kguv” was chosen. The actual content of the chapter can be inserted into the *content* field, with the instructions in the corresponding text area. The *question* field allows authors to specify questions for each chapter, which are displayed in the comment section, and thus can support and guide the direction of the comments given by readers. The *AddContentServlet* also gives an overview of already existing chapters. It lists all chapters with their information, and also provides a link to remove individual chapters.

The *AddCommentServlet* basically provides the same functionality for comments. It allows inserting comments via a form, and also lists all submitted feedback in a table. Comments can be deleted as well, in order to allow removing inappropriate content.

Datastore

As already mentioned before, the Google Datastore was used as a database system. In contrast to traditional relation database systems, it enables the storing of whole objects. Two kind of information are persistently stored: (1) information about the individual chapters of the stories; (2) comments submitted by readers. Figure 5-9 shows the two classes and all attributes that are stored (a entity-relationship diagram is attached in Appendix B). The datastore provides the JDO and JPA interfaces. The former was used for this project; thus, in order to store objects, traditional Java classes were extended with additional annotations. To declare a class as capable of being stored and managed using JDO, the *@PersistenceCapable* annotation must be added to it. Additionally, a primary key needs to be declared using the *@PrimaryKey* annotation. For attributes that are to be stored in the datastore, *@Persistent* needs to be added.

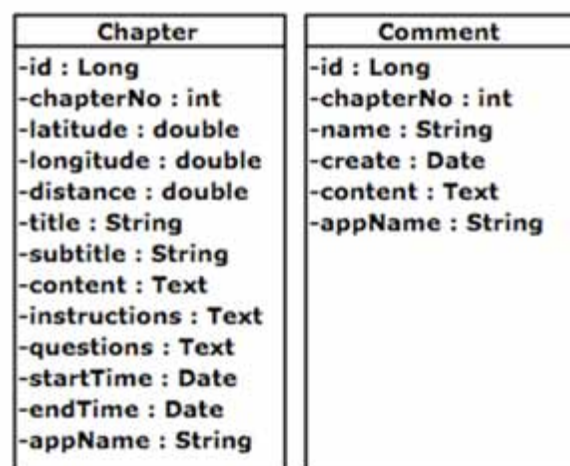


Figure 5-9. Class diagrams (attributes only) for persistently stored classes

```
PersistenceManager pm = PMF.get().getPersistenceManager();
String query = "select from " + Chapter.class.getName() + "
where chapterNo==0" + "&& appName==" + appName + "'";
List<Chapter> cl = (List<Chapter>)pm.newQuery(query).execute();

Chapter newChapter = new Chapter(...);
PersistenceManager pm = PMF.get().getPersistenceManager();
try { pm.makePersistent(newChapter); }
finally { pm.close(); }
```

Figure 5-8. Code samples for querying and inserting data

Having classes prepared like this, storing an instance of this class in the datastore is easily achieved, since the *PersistenceManager* class does most of the work. A new instance needs only to be handed over to it, and then is permanently stored. Querying from the datastore is done with JDQL, which is very similar to SQL. One way to do create queries is to build a query string, and then let the *PersistenceManager* instance execute this. The result is a list of objects that match the query (see Figure 5-8).

5.2.4 Evolution of prototypes

The *Mobile Narrative* system described above has been iteratively developed, following the method commonly referred to as “Iterative Prototyping” (Goldman/Narayanaswamy 1992; Naumann/Jenkins 1982, 29-44). As illustrated in Figure 5-10, iterative prototyping is an interactive process between developers and users. With initially identified requirements, a first version is constructed and used quickly. Discovered problems are then improved in the next evolution of the prototype. Due to this process, different prototypes were implemented for the user studies. The differences will be pointed out in this section; however, the focus will be on the mobile client, as this was the only part visible to the study participants. The server was obviously adapted along with the changes made to the client.

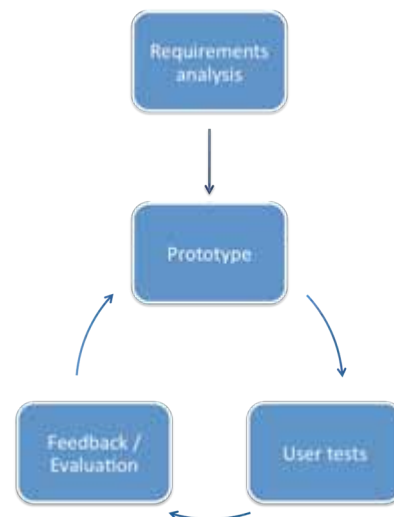


Figure 5-10. Iterative prototyping process

The first prototype for KGUV I was developed on the feedback of the paper prototype session, and its design was based on Kaasinen’s (2009, 79-97) Technology Acceptance Model for mobile services (TAMM), which sees the “perceived ease of adoption” as a decisive factor for acceptance. In particular, services that are only used occasionally should be designed so that users can easily start and put them into use. Configuration and personalization requires a lot of effort, which can prevent users from actually using a service. The results from the paper prototype session reconfirmed this, as participants were very pleased by the simple design. Thus, the initially developed version was built as simply as possible. It only consisted of two tabs (the *Reader* and *Map* tab) instead of three tabs in the final version. Users mainly required the former tab, and were guided through the application with the *Next/Back* buttons. Only if further assistance was needed would the map be consulted.

In the second step, the prototype was amended by adding feedback functionality. A third tab, the *Comment* tab, was integrated in the user interface. It allows readers to submit comments regarding the individual chapters, containing a text message and their name. The comments were then displayed at the end of each chapter. This extension of the prototype was mainly developer driven, as the feedback functionality was required.

However, the third and last version of this system addressed again more strongly the user needs. Users were asking for a clearer distinction between the chapter content and the comment section, thus the interface was adapted and the comments were displayed in a speech bubble that could be popped up when reading a chapter. Another observation was that

users were often unsure what to write about, and so the possibility for authors to specify questions for the comment section was introduced. In addition, this version also included the time restrictions that enabled authors to define times when the chapters are to be read.

5.3 Narrative Map

This section describes the technical realization of the *Narrative Map* concept. In contrast to the aforementioned *Mobile Narrative*, there is no continuous story presented across several locations, but each location holds its own individual narrative information. This may contain information about authors that have a strong connection to a certain location, or extracts from stories that describe a place. Moreover, this concept does not stipulate the reading order on readers, but gives them the opportunity to choose a personal order according to their preferences. Therefore, readers need to know all possible locations at the beginning.

These changes in the concept also required an adaptation of the implementation. Even though the *Mobile Narrative* application was used as a basis, some fundamental parts were altered. Those differences to the other system will be identified in the following sections. Section 5.3.1 starts with changes regarding the architecture and communication, followed by the overview of the client application (section 5.3.2), as well as the server-side implementation (section 5.3.3). A comparison of the different prototype version as for the previous system is not necessary, since only one user study was conducted using the *Narrative Map*, and so only one prototype version has been developed.

5.3.1 Architecture & Communication

The *Narrative Map* system was based on the same core system, consisting of a server and a mobile client. However, the assignment of roles and responsibilities was significantly changed. Figure 5-11 illustrates the altered communication flow. Remarkable is the reduced communication between the mobile client and the server. Instead of two requests (one for the instructions and one for the chapter content) for each chapter, the *Narrative Map* client only contacts the server in the beginning, and the server sends back the data for all locations. This

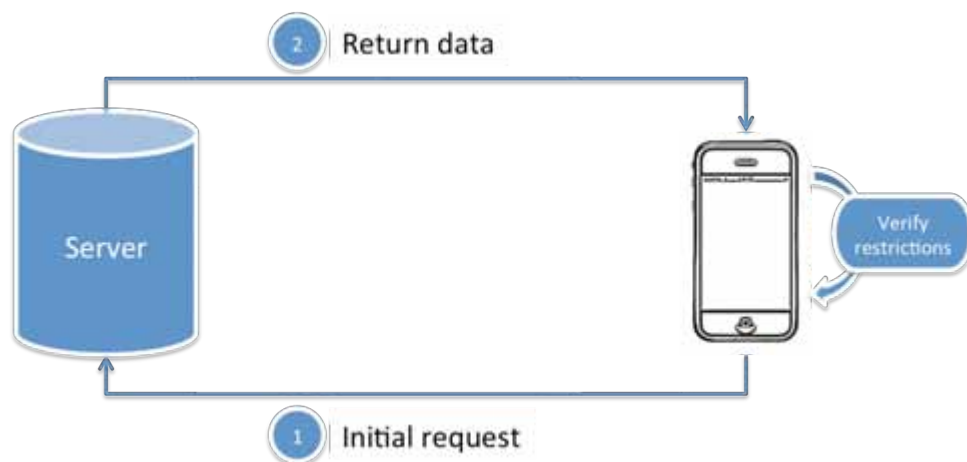


Figure 5-11. Communication flow in *Narrative Map* system

is necessary, because the client needs to know about all locations in order to display those on its map.

In addition to the location information, the server sends the chapter content in its response. This was done to reduce delays caused by the communication. In the preceding user studies, participants communicated that the server responses were partly heavily delayed, which downgraded the user experience. By changing the communication flow, the initial request takes a bit longer, but with the advantage of having the remaining interaction mainly without any delays.

Another consequence of the change is the changed responsibility for handling the restrictions. As the chapter content is transferred to the client with the initial response, the client has to verify that the restrictions and constraints are met. Therefore, the specified restrictions are also sent together with the information for all chapters.

5.3.2 Mobile Client

In this section the *Narrative Map* application, also called *LiteraryMap*, is presented and its modification in comparison to the *Mobile Narrative* application highlighted. The changes in the communication flow also lead to a significantly modified user interface of the client application. The interface structure was again reduced to two tabs, a Map and Comment tab. The Map tab contains marker for all locations, and a short description about the places is displayed when the marker is touched. Figure 5-12a, for instance, shows the screen after the user touched the marker for Estelle Pinney's house. In addition to the name of the marker, a textual description of the location is given (e.g. "21 Franklin Street") to assist the user in case of an inaccurate representation on the map. Next to those text fields, a book symbol is displayed, which acts as a button. If readers want to retrieve the associated content for a place,



Figure 5-12. Screenshots of the application: (a) Map tab (b) Map tap displaying information (c) Comment tab

they need to select a chapter by touching the marker, and then press the book. If they are close enough, the content is displayed in a popup dialog (see Figure 5-12b).

Additional changes were carried out for the commenting section. First, the Comment tab could no longer be opened, but only from the popup dialog displaying the content. This was done to only allow people to write comments after they had really been to the place. Moreover, the prominent position of the button was intended to motivate people to comment and give feedback. A further modification was again integrated for exploring other restrictions: A character limitation was imposed on comments. Comments were only allowed to have 140 characters. A text field above the comment field indicated how many characters were left, and so the user knew how much space was left and whether he would run out of space. Further, existing comments were moved to the Comment tab, instead of being displayed next to the comment in order to provide a clear design.

5.3.3 Server

On the server side, the system was clearly simplified due to the reduced responsibility for verifying the constraints. In this system, the *LiteraryMapServlet* is the servlet responsible for the incoming requests of the *Narrative Map* client application. It checks the *appName* of incoming requests and, if existent, returns all associated content to the client.

As a result of the changed information flow, the communication protocol also changed. Instead of several single messages for each chapter, the server now transmits all chapters at once. Figure 5-13 illustrates a communication block, which consists of several chapters, which are indicated as rows.

The other parts of the server, i.e. the web interface and the datastore, remained unchanged.

NO	LAT	LONG	DIST	TITLE	SUB	CON	INSTR	CMT	QU	MTR
NO	LAT	LONG	DIST	TITLE	SUB	CON	INSTR	CMT	QU	MTR
...

NO: Chapter Number	DIST: Distance	CON: Content	QU: Question
LAT: Latitude	TITLE: Chapter Title	INSTR: Instructions	MTR: Minutes To Read
LONG: Longitude	SUB: Subtitle	CMT: Comments	TEXT: Information text

Figure 5-13. Communication block of server

6 Conclusion

Mobile services presently still do not provide the same comfort and user experience as general web services accessed from a stationary device. Thus, it is important to find ways to deliver the provided content in a more engaging way in order to improve the perceived experience. More and more mobile services strongly rely on the engagement and participation of their users. Mobile Web 2.0 services will not be sustained if users are not willing to participate and actively contribute. Other mobile services are also likely to be omitted if they are not able to produce an engaging user experience.

This study explored ways of reaching this aim. It challenged the predominant *anytime, anywhere* paradigm in the context of mobile service, which aims to provide unlimited information access to users independently from their context. Even though this paradigm might be advantageous for many application areas, it does not really contribute to an engaging user experience. In contrast, this work examined whether the opposing way, the introduction of restrictions and constraints, could be beneficial for the user's motivation and enticement. In order to verify this approach, two systems were developed: a *Mobile Narrative* and a *Narrative Map*. The former is a digital story that unfolds the individual chapters only if the user is at the location the story takes place. The latter provides extracts from stories or information snippets about authors that are relevant for certain locations. In both concepts, the access to information is constrained with location and place restrictions, i.e. users can only access the content at certain locations or at certain times. Furthermore, a feedback channel for users was provided with the options to contribute user-generated content. This channel was also constrained with location, time and size limitations.

In the following, the research questions from section 1.2 are revisited, and the findings from the studies and their implications in regards to those questions addressed. The first research question was the following:

Is the anytime, anywhere paradigm, which is currently widely followed in the mobile web environment, the only desirable concept for engaging people? Or do areas exist in which restrictions and limitations concerning the access of information intensify the enticement and rather motivate users to engage instead of actually restricting them?

The results from the studies show that there are indeed possible applications where restrictions and limitations are reasonable and even desirable. Users liked the *Mobile Narrative* concept in particular because of the imposed restrictions. It transformed the information retrieval into an interesting and special event. Users had to put effort into it, but then gained an exceptional experience in return. It was described as a sort of treasure hunt, but instead of the reward being fun, this way of presenting information provided an intensified user experience and stronger engagement with the actual content. With the *anytime, anywhere* concept, where information is always just a few clicks away, this level of engagement with and valuation of the content is typically not reached.

The second research question looked at the influence of motivating users to contribute own content:

Do restrictions and limitations influence the motivation of users to participate and contribute self-generated content?

Three different kinds of restrictions for content contribution were tested, and it was shown that, if they are applied in a suitable manner, those restrictions could motivate users to participate. One of the main reasons for this was there was no opportunity to procrastinate - people either had to do it there and then or had to leave it. Another important explanation for it was the fact that the consumed information was still fresh in mind, so it was easier for participants to write about it. But they did not only foster motivation to participate, but had an influence on the quality of the generated content, as participants highlighted it.

Even though these results are already interesting, a key part is questioned in the third research question:

In which application areas is an unrestricted and unlimited access more sensible, and in which areas are restrictions useful?

So far it was shown that restrictions and constraints indeed have a positive influence on the user motivation and engagement for accessing information, as well as for contributing content. However, in order to be successfully employed, designers and developers need to know when to utilize these techniques. It was observed that users enjoyed, or at least accepted, the restrictions when they “made sense” from their point of view. If users could see the benefit derived from the restriction, they were willing to accept it. Readers did not mind going to a specified location and putting their time and energy into it in order to be able to read the chapters, as long as the reading experience benefitted from the fact that they were in situ. Since the benefits caused by the time restrictions were not obvious to all participants, as there were divided opinions about the necessity of those constraints. Thus, if developers want to integrate restrictions in their mobile services, they need to ensure that the imposed limitations result in some kind of positive effects for the users, which counterbalance the negative consequences users are willing to put up with.

Another important aspect is the context in which the mobile service is used. This study solely explored the effects of restrictions on mobile narratives, and so only one special kind of possible application was examined. However, the results indicate that users were only willing to accept those constraints if their experience was positively influenced in return. This hints at the fact that the findings from this study are primarily relevant for areas which aim at providing a good experience to the users. This might not be the case for applications or services in the business context, where the main focus usually lies on proving information rather than a user experience, but rather for mobile services that want to provide an entertaining user experience. It does not exclude services that mainly provide information, but which have the user experience as one of their aims. Tourist guides, for instance, might mainly deliver relevant information about the area; however, those services usually do not want to solely supply plain information, but rather aim at providing tourists with an interesting experience and so, as seen in the *Narrative Map*, restrictions can be applied in this context as well.

Another way of exploiting the *Mobile Narrative* concept is the utilization for community engagement (cf. Wiesner/Foth 2009). Instead of simply using the system for entertaining purposes, it was adapted for civic engagement purposes (see Figure 6-1). In civic planning processes, possible future developments could be captured in a story and then presented to the citizen using the *Mobile Narrative* systems. This would combine several aspects: it would force citizens to actually go to the involved areas at relevant times, and experience the situation as it is today. Then the future scenario would be illustrated, which might help to imagine the consequences of certain solutions. Moreover, the constrained feedback would also lead to spontaneous responses, which might differ from the elaborated usual answers. So this example shows that, especially for application areas that require a good understanding of the setting, or in which spontaneous and immediate feedback is desired, this concept of restricted and constrained interaction could be applied.



Figure 6-1. Exploiting *Mobile Narratives* for civic engagement

The fourth and last research question broached the issue of the design of constraints:

How can restrictions for mobile applications be designed in order to attain an acceptable and engaging experience?

After having identified possible restrictions that could improve the user experience, it is essential to design those properly within the system. Restrictions need to be integrated in a way that is accepted by users. For this, two crucial aspects were observed in the user studies. One crucial factor is to clearly indicate and communicate the restrictions. Participants found it frustrating when they realized that something was restricted and which they were not aware of. In the user studies, several users tried to submit comments even though they were no longer at the specified locations. The problem here was that those users could have submitted the comments on the spot, but did not do it, because they did not know the restriction. This led to frustrated users as well as content that was not submitted which would otherwise be sent, since the users in these cases were keen on contributing.

Another significant design aspect was the clear connection of restrictions to the benefits. As mentioned before, users were only accepting the imposed constraints as long as they entailed some positive effects for the user experience. However, sometimes those benefits were not seen as the effect of restrictions, but rather as part of the usual user experience. Here again, a clear indication and communication of which benefits are related to which restrictions is necessary.

Even though this study showed possible positive ramifications of constrained information access and contribution, this work has its limitations. First, the scope of the studies was limited. Second, only a few restrictions could be tested. Thus, this study merely highlights that these restrictions can result in positive effects, and thereby open new possibilities for future research projects. Future work could explore additional restrictions and limitations that could lead to engaging experiences. Another possible constraint for accessing information could be that there need to be at least more than one user at a certain location in order to be able to retrieve the content. It could also provide users that are reading the same text at the same time an opportunity to contact each other, which could lead to an interactive experience, involving the exchange and communication with other users. The content could also adapt and change in case multiple people access it at the same time. The act of reading, typically carried out alone, could thereby evolve to a group activity. Or it could be explored whether restricting the visibility of generated content might influence contribution. Users might be more likely to contribute if only people they know will be able to view their submissions.

These examples show that there are several possible restrictions that could be applied and tested in further studies. Besides the exploration of other restrictions, the presented restrictions also need to be verified in a broader scope. So in a next step, it is planned to expand the currently existing web interface and build up a web portal for authors to create mobile narratives in a do-it-yourself manner. With this, the effects of the presented concepts could be evaluated in large-scale user studies. In respect to the technical implementation, several improvements are planned. As suggested by authors and users, instructions are to be supported by photos of the specified locations, so that users can verify that they found the correct spot. Further, in order to enhance orientation and navigation, techniques to indicate off-screen objects could be integrated (Baudisch/Rosenholtz 2003; Burigat/Chittaro/Gabrielli 2006; Gustafson et al. 2008). This would simplify the process of finding the next location and would reduce the amount of required zooming. With these improvements, users would not have to bother so much about the handling of the application, but could rather focus on engaging with the content and the environments.

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Appendix A Interview & User Study Transcripts

A.1 Transcripts of author interviews

- PARTICIPANT 1**
- 1. Effects & implications of Mobile Narratives (MN)¹**
- 1.1. Which effects do MN have on the way authors write stories?
- How could authors exploit the power of knowing where the reader is?
- If you can write the story and know that the people, when they read it, will actually be in the environment you are writing about, that's kind of very strange. Because in principle you write something like I make the whole world and they will see it, but you don't have to, you just have to describe what is there and use that, so that is almost a little bit less creative, but more considerate. You have to be really careful that you do it so that people will actually know that they are in the same place, and don't actually invent extra things.
 - With the one we did, it was not that extreme, but you could do really cool things, like you could have people in very scary places where you know scary things will happen, that'll be a train went by that's very loud. You could make it a really nice experience, because you have the visuals, and you have things they might hear, and you have all the other experiences that you can give them, so that's a very good thing. You can do a lot of exciting things with it.
- 1.2. Can you think of others factors / settings than the place, an author would like to determine?
- What do you think about time?
- It would be good if you could control the weather.... No, but what could you do? It's the first time I have done this, so there are so many possibilities, so it's really hard to actually name one. Because it would be so weird, already that you are like "yeah, okay, this all there". And the more predictable the environment is, of course, the better you can use it. Like if you know that at a certain time something will definitely happen, like if it's a clock tower going off or something. If you would be reading "in three seconds you will hear this" and then you actually hear it, it would be very strange. I imagine to write this knowing that this will happen, will also be very strange.
- 1.3. Which effects do MN have on the way of reading?
- What changed for the reader?
- I suppose you can immerse yourself better. I imagine that if you can actually see where it takes place and get the feeling, because it is always like "you have to put the reader in the story" but in this the reader is actually in the story. So I suppose it would be a more intense reading experience and also a much more a visual reading experience, because you could picture everything, because you are there, so it does not even take an effort. But it would also probably – for a group of people that would all have a similar experience – be odd, because usually when you read something, everybody makes his own thing. But in this case, everybody know exactly what things are supposed to look like, and where some things happen. So it would be kind of homogenized.
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- ¹ Mobile Narrative: Story that you read while walking around
- 1.4. What are the advantages and disadvantages of MN?
- The advantage is that you can get really into the story, because you have everything there. And the disadvantage is, that probably a lot of people read because they don't want to know what something looks like, it's like read the book or see the movie, so this is like read the book and see exactly what's going on. Some people might not enjoy that, because they don't read for that purpose but then they wouldn't do it.
- 1.5. What are the challenges of writing MN?
- To not make things up, to not go "oh yeah, and over there", no there's not, because there isn't, there is this and this is all there is. Because it is very difficult for me it is, because I am not a very descriptive kind of person. There are things that have to be in it, so that people can relate to where they are, so that, for me, was very difficult to actually incorporate.
- 2. Author-Reader relationship**
- 2.1. Readers can directly give feedback while reading: how does this change the author-reader relationship?
- But that would be very useful, because you always want feedback. The more people you get feedback from, the better. And if you actually can build kind of like a relationship with the reader, they could say: "oh that doesn't work, but it might like this". The writer of course kind of makes the framework, but then if they actually have input on the story and make suggestions, that would be very good, because it is not a very communicative relationship between the reader and the writer. Because the writer tells them everything, and the reader only consumes. So it's not only consumption anymore, so that would probably a very good thing.
- 2.2. How do you feel about this change?
- 2.3. Which others effects do MN have on the author-reader relationship?
- I would like this, but I'm sure that not every write would like this. Because it is like "it's my work, you don't know anything". But I enjoyed that, because in the end you want the reader to be placed. And if the reader can actually tell you what they would like rather than what you have done, than that's a pretty good information on how to please.
- 3. Author's experience**
- 3.1. Have you ever written a MN? If yes, what was your experience?
- I thought it was really cool, because you never know if you just write a story, what the people will think or what their experience will be, and in this we actually could have some idea of what it would be, because you are like this is where they are going to be sitting, so this is what I can give them, so you can work with that, so you can say there is sun coming from here and there is going to be the noise of the road over there, and that it didn't use to be this noise, but it used to be this, and you can use it to make this kind of sensation... That was really nice, it was strange at first, it was difficult for the first bit, because it is very odd, but then it was very, very exciting.
- 3.2. How did you approach it? / How would you approach it if you had to?

- I sat down with my laptop at the locations writing it down. Because otherwise you can't do it. I tried to sit down and take notes, and then go home, but that did not work at all, so I had to be there, so I would know what it's like so that I could describe for the reader what it's like. That was the more reasonable approach for me.

Did you also involve some kind of research about the places?

- I had a little bit. Because it was on campus, that made it a little bit easier, because there is a lot of information. I read the material that he gave me, looked for a story that looked appealing. It is just so funny, if you have one army camp there and one there and all the single young girls up the hill, that's just retarded, like who would do that. That was an easy thing to make a story out of it, because it just gave so much material.

4. Mobile Narrative Application (MNA)²

- 4.1. What would you expect of a MNA?
- 4.2. Which features should it have?
- 4.3. What would it need to support the story?
- 4.4. How could it be used to support the act of writing a story?
 - Well, I have seen an iPhone once in my life, and you can actually flip pages and stuff, which is cool. But I suppose, as long as you have the text there, and you have a machine telling you were to go, and if you have maybe a picture of where you should be so that you can make sure... I don't know, it depends on how much possibilities there are, I have no idea of what you even could do. I reckon it would be nice if you were at the place, but on the thing you might get visuals of what it used to look like. This is where you are now, but really, this is what used to be there to give them a bit more of the experience. Because you can describe it in the story, but if they actually saw it that it for example used to be an actual parade ground, that would make it a little bit more sensible.

You mentioned you would also like to have a picture to make sure that you are really at the correct spot. Should it be for example a picture of the bench you are supposed to sit on?

- That would probably be kind of reasonable, or even a picture of the view. Like if you sit at the spot and you see all of this, this is where you are supposed to be.
- The only things that helps is that if you get as much background information as possible about the location you are writing about, that's really the only thing you need. I don't think you need technical support, because really what are you doing is to write something down, that's not really a very complex technical process for the writer.

5. Paper Prototype

- 5.1. What do you think about the prototype? Does it meet your expectations?
- 5.2. What would you like to change in the prototype to support MNs more efficiently?

² Mobile Narrative Application: Application on mobile phone that supports / enables Mobile Narratives

- That looks good, because it has to be easy to use, because otherwise people might not enjoy it all that much. That's pretty cool. You probably shouldn't be able to get the chapters until you are there, because if you read it at the wrong place, it might not be enjoyable, because you don't get the full benefit. I don't know if it's possible for the phone to know that you are there, and then only when you are there give you the text.
- It looks so easy and so straightforward, and that's a good thing. Because it is already a very complex thing to actually make work. I reckon, the simpler, the more people will enjoy it.

PARTICIPANT 2

1. Effects & implications of Mobile Narratives (MN)¹

1.1. Which effects do MN have on the way authors write stories?

- How could authors exploit the power of knowing where the reader is?
- The main effect for me seems to be to do with in situ reading, so the main effect is anticipating what effect the reading will have from being at one place and reading about that place whilst being there. So it's an effect on the writer in terms of how much they have to describe setting, and how much focus they put on different elements like setting, plot, and character. That's one element. The other element would be to do with plot itself, it seems to be something to do with working out plot along the lines of moving to different places. So oftentimes when you write a story, you're not necessarily thinking about moving the setting that much, and of moving the story into different places. If you have to write something for mobile technology, which takes you to different places, physically, then you have to think about the plot, an about how you can move it and have enough places to go to. I guess the other thing is reading off the screen, and how you might permit the sections, so it might have a word limit implication, you want to have sections shorter that you might have in a regular book.
 - You can exploit it in terms of either not saying much about setting, not giving as much time and space to describe the setting of the story, because the person is actually there. Or you could really play on it, and going to real detail about the setting, and really directly relate to the reader. You could even use second person description of something, saying "Look around you! What you see here..." and all the different things, and that level of engagement is difficult to get in traditional narratives.

1.2. Can you think of others factors / settings than the place, an author would like to determine?

- What do you think about time?
- They could determine the time in which you are there. It could be really interesting to play with the order in which you read the different sections, so not thinking about things in the traditional linear way that has to happen in a certain time structure. What could be really interesting is playing with narrative in terms of, you have six different settings and you don't have to read them in a certain order, you can go to wherever setting you want to go next.

1.3. Which effects do MN have on the way of reading?

What changed for the reader?

1.4. What are the advantages and disadvantages of MN?

- Probably those things of reading off the screen, which is still difficult for people to do, especially in terms of the long piece of prose, although that is changing with the books coming on iPhones and stuff like that, the Amazon Kindle. Obviously, another effect on reading is being there whilst you actually read it in

situ, your senses are heightened. But it might have negative effects in terms of your imagination is taken away a little bit. So you are not able to paint your own picture in your mind of what the place looks like, instead you are directed by what you see around you.

- Other disadvantages are things like accessibility and being able to get to the actual places. This is a very specialized method of reading. It's not something you could do in bed, or something you could do in that spare five minutes you might have when you go to train, you have to make a special effort. That could be a limitation as well, as people at the moment, for reading, don't make a special effort to read something, they just do it in their spare time.

1.5. What are the challenges of writing MN?

- The challenges for me would be to do with size and to do with linking really directly the plot and the setting. A lot of the times your characters might have a flashback about a place and a time completely different to where they are now. They might have a flashback to a different country, or something like that, so that's a limitation, that's a barrier for me. Because you can only sort of be in the present - that's not necessarily true, they can only be in a certain small geographic place. So you have to think about how your plot and your setting link up. There would be something else, I think the voice will have to be quite brief and direct, perhaps, I am not sure though, I have to have a go.

2. Author-Reader relationship

2.1. Readers can directly give feedback while reading: how does this change the author-reader relationship?

- Obviously, it opens it up a lot more. I don't know that it would change the author's way writing it in any way, but it would mean that there is a much more direct line of interaction than there currently is. Authors are quite accessible anyway, quite a lot of authors have fan pages, and happen to talk to fans and readers, and things like that. This would obviously be quite a direct and almost innovative way of having feedback. I mean, the problematic nature of this is, you might want to moderate the comments that come back. A lot of people can be quite nasty about what they say about creative work, and a lot of people who write can be quite touchy about the work they do. So you want to have some sort of moderation in terms of feedback.

2.2. How do you feel about this change?

- I would be fine. But I know if a lot of my students wrote a story coming up there, and someone said not very nice things about it, they would be quite upset, and might not want to do it again.

2.3. Which others effects do MV have on the author-reader relationship?

3. Author's experience

3.1. Have you ever written a MN? If yes, what was your experience?

3.2. How did you approach it? / How would you approach it if you had to?

- I think probably the most effective way will be go and write it in the place you are going to set the stories. If you are going to set it in a park somewhere, you go to the park and you take some notes about what the park looks like. And that could

¹ Mobile Narrative: Story that you read while walking around

be kind of problematic, because if you are going to describe the park, and you don't describe it accurately - that sort of accuracy is a lot more important for the reader to see that your description of the setting is actually what the setting looks like, because they are there when they read. So it's very different to writing a traditional narrative. So you might go to the place and write it. You might also do some more planning and structuring before you sit down and write the story, rather than letting the story work itself out. You might create a quite detailed plan, I think you certainly do a chapter break-down or a section break-down, about what different places you want to cover, what's the narrative going to do across the different setting.

was something I did not think of, which I think works really well. Yes, that looks great.

- 5.2. What would you like to change in the prototype to support MNs more efficiently?
- I mean, you could have more information to do with the place here, but has nothing to do with the design. No, I think the design looks really good.

4. **Mobile Narrative Application (MNA)**²

- 4.1. What would you expect of a MNA?
- 4.2. Which features should it have?
- 4.3. What would it need to support the story?
- It would need to be very user-friendly. I would envision it as having a map, a central map, and then, with the touch-screen, you press on wherever you are, it maps where you are, you press on where you are, opens up to a document, which then you can just scroll down and read through the chapter, whatever it is, that that chapter is not very long. That sort of thing, plus a menu screen or something like that. The sort of people we'd be targeting are often not very technologically adept, so it has to be as simple as possible.
 - I would kind of like it when it just told you on the map where you were through GPS, and as you walked towards somewhere, you'd just see your marker coming towards the marker you walk towards, and then you know when you get there... Maybe you can't launch the chapter until you get to that place. So you know when you get there and you're able to load that chapter, and you start reading, and you start looking around, and realizing that this is the city.
- 4.4. How could it be used to support the act of writing a story?
- I don't know if that's necessary. The important thing will be to work out, through studies of users, how many words are too many words for a section. And then once you do that, you can say to the author, you have a maximum of this many words, and then provide the framework. I don't think, from a technological point, that there is anything that can help writers there. But then, that's not an area which I am really strong in.

5. **Paper Prototype**

- 5.1. What do you think about the prototype? Does it meet your expectations?
- I think that looks great! That is exactly what I thought of it. The simplicity of this interface looks really good. And the capacity of having instructions and a map,

² Mobile Narrative Application: Application on mobile phone that supports / enables Mobile Narratives

PARTICIPANT 3

1. Effects & implications of Mobile Narratives (MN)¹

1.1. Which effects do MN have on the way authors write stories?

- How could authors exploit the power of knowing where the reader is? It's hard to quantify how it is going to effect authors, because I don't think there are many authors who think that far ahead in the way they write. When they're writing, I don't think many authors are thinking beyond maybe a friend who might read the work for them or an editor. Some authors talk about having an audience, having a reading public. I met a lot of authors, and very few of them write for a big audience. With that in mind, they write for very specific readers, friends or someone, or for themselves, so the idea that they'd be thinking about the mobile delivery of the story, years, months, decades later, is unlikely. So I don't think that this would be foremost in authors' minds.
- The scenario you are suggesting is that an author writes something thinking that it is going to be read in a certain point. Yes, if it is written with that sort of clear objective, then I suppose, it would be hard as an author imagine not to want to emphasize setting and place. I think it would be hard not to kind of talk to the reader in those terms, and landscape, and the relationship between narrative and setting, you'd imagine to become more pronounced. But it's not always that clear, is it? You know, sometimes an event can be more important than a place in defining a place. Something happen at a certain place becomes more important than the fact that there are some buildings there that have historical value or whatever. So it's a very hard thing to predict, but you would expect that if an author was writing for a particular reading place, that it would be hard not to have that reading place in mind. I'm sorry that is a vague answer...
 - There are lots of ways that you could do it. The trick is doing it in a way that does not feel artificial. Of course you could address the reader: "Look up! What do you see over there..." And then pull them back to the story. That's a way of exploiting the fact that you know where your reader is when they are reading. And yet it does feel like an artificial device. It would seem unnatural in a narrative for the writer to suddenly tell you to stand up and look around or something like that. Perhaps another less artificial technique might be to draw our knowledge that a reader necessarily has because of where they are. A reader sitting at that particular bench must know what it is like to listen to the traffic of Boundary Street; therefore I can assume that knowledge to be there. And that might be a more settle way. I mean there would be things you could do. I have never thought about it, but thinking about it, I can imagine that would be devices you could do this.

- 1.2. Can you think of others factors / settings than the place, an author would like to determine?
What do you think about time?

for saying that you should be back in your library, relining comfortably in the evening, when you read. And that's the perfect moment for contemplation. And I suppose, in a way, visual artists had more to say about this than writers. You think of impressionists, and how they forced people out of the studio and into the landscape. And sort of forced the engagement, a real engagement with landscape rather than a reflective one. The answer to your question is as various as authors themselves. Some authors couldn't care about their readers, some authors have a very clear picture of who reads their work, and I just don't think I can generalize. I suppose every author wants a sympathetic reader. A reader, trying to read their work from the point of view that it was written, and to make an evaluation of the work with that in mind. So if you can do something to the reader that places them in that sympathetic position - great! But I think most writers would answer that is the work of good writing. Writing should do that. You shouldn't have to rely on anything else. People have these rails about photographs in books, or drawings. If you wrote a really good travel book, should you have any photographs in the book? And a lot of purists would say "No", because the writing should do all this for the reader, you are sort of cheating.

1.3. Which effects do MN have on the way of reading?

What changed for the reader?

1.4. What are the advantages and disadvantages of MN?

- I think the big disadvantage would be, the one you did in Kelvin Grove, where it was a story that the reader went along with, is that it feels artificial. It does not feel like an organic reading experience. And that's probably just historical, we are not used to read in that way. We are used to read on our own, or in an enclosed mental space among other people, so in a train or wherever. And we are used to read in fairly large slaps, and if you have time, perhaps before you go to bed and read for half an hour or something. So you read quite a lot in that time. The idea that you are walking and then reading a little bit of a story and then moving to another place and reading more of the story that is set there, is quite a radical change in reading patterns, and that's why it feels artificial. I think that is the disadvantage; it just does not feel like the way we read. The advantage I think is a simple one. It's about pleasure. There is something very tangible, that is kind of reading. It feels as though you are kind of almost materially present in the story. And that means that your senses are being aroused, in all kinds of ways, rather than just through the reading experience. You are in the place, you're seeing the world the author saw, you are almost feeling as though you are having a conversation with the author, about the place you are in. I think that is exciting and pleasurable. Most of us normally just get it when we go to a place that we have read about. So you have spent your life reading a certain author, and then you go to their home, that's a very exciting moment. So this has that possibility as well.

1.5. What are the challenges of writing MN?

they are writing for some other reason than their art. So I think the hardest task would be perhaps forgetting that you are doing it as part of a plan of a relationship to the land, and just letting the story develop first. And then see what connections there are. It's a little bit like publishing. A lot of writers can't think about whether they are going to publish something until it's finished, and then they look for someone to publish their work. And that's probably the right way to go, in a way. Because that means your writing develops first, and then we think about where it's going to be at home. It's not a real practical way to write, but I think it's more artistic.

2. Author-Reader relationship

- 2.1. Readers can directly give feedback while reading; how does this change the author-reader relationship?
- Traditionally the author-reader relationship has been a very slow one. A work is published, it become reviewed and a subject of discussion, and that's the extent of the discussion between author and readers. Except perhaps letters to authors, and these sorts of things. In my experience most authors really value the feedback they get, because often they feel quite isolated. They spend a lot of time in their own rooms, working on their work, and then the book goes out there and it's sort of lost. It's the world's then, and it becomes a subject of a public debate, not necessarily a conversation. The problem for authors is that most authors don't want too much feedback, because it can be very unsettling. It's sometimes best to not get too much feedback early, especially for young authors or developing authors, because they can change the way they write quite quickly in response to feedback, whereas actually what they might need is just to be allowed to develop at their own speed. And you don't want authors always reacting, especially to negative (feedback). If somebody says you should have left that scene out, and then you also text that scene out. And then the next reader says, there is a scene missing in here somewhere, and they put it back in. I think there's a danger that that could happen, for emerging writers. For some more established writers who are confident about their work, and who don't mind a sort of meditate exchange, I think it's fantastic. But I there are a lot of writers who wouldn't like it, who don't really like the public. If they wanted that sort of immediate conversation, they wouldn't have gone to writing, they would have gone to something else. That'd be journalism, or radio, or politics. One of the good things about writing is that it's slow, and measured and controlled. It's not immediate.

2.2. How do you feel about this change?

- I think it's a healthy thing, the work you are doing with these stories. Because it's about engagement ultimately. And not just about engaging people in the world that they live in, but about engaging writers in the way they think about what they represent. And I think that's really worthwhile that writers have a sense of their place. But I think the opposite is also true. Sometimes you just have to let people be on their own and to write what they think, in their own quite place. So it sort of comes down to the kind of writer you are. Do you want to be a member of a scene, and a place and time, or do you need that separation in order to do your best work? It's not an "either or", it's an "and" thing, they can exist both of them. To answer your question, I would probably like a bit of both. I like these sort of projects, they are terrific, they are enlivening, interesting and exciting,

democratic. But I also think there are times where you need to just work on your own, shut the door...

2.3. Which others effects do MV have on the author-reader relationship?

3. Author's experience

- 3.1. Have you ever written a MN? If yes, what was your experience?
- 3.2. How did you approach it? / How would you approach it if you had to?
- What I would hope is that the person who commissioned the story, gave me a very open brief, and just said "we are collecting stories about Kelvin Grove", and we would like you to write story that you would call "Kelvin Grove". And then I would like that person then to leave me alone, and trust the author, that they will do something interesting with it. And if you don't trust the author to do something interesting with that topic, then they are probably not the right author to be working on the project. And then I think, after that, you have a conversation how you might use that story in a kind of interactive way, or in a landscape-oriented way. But the problem with that is that it could be really hit-and-miss. You might get someone who writes a story about Kelvin Grove, which is about a room in Kelvin Grove, or something very specific. Do you want functional art designed for specific purpose? If the answer to that is yes, then it's important to know that creative writers had got 3000 years, or maybe not that long, but since certainly a lot of time, where they had not worked that way, where they worked according to the artistic design, and had been able to be quite selfish in that respect. So you are going to undo a very long cultural tradition of individualism in the creative writing field. I think that's tricky. Probably worthwhile. The preciousness that creative writers have is probably misplaced. Because film writers don't think that way, they work in teams. TV writers work together, play writers often work in groups, scholarly writers work on things together and work on things functionally, they have set a task and they do it. So why shouldn't literary authors? What's so special about them?

4. Mobile Narrative Application (MNA)²

- 4.1. What would you expect of a MNA?
- 4.2. Which features should it have?
- 4.3. What would it need to support the story?
- I think everything you have got already is all you need. In fact, I think, perhaps it's more than you need. I did the walk with my mum, and for someone in her age group to have an iPhone is a bit of a challenge. That's sounds crazy, but especially with the map... I don't think people always realise that for our generation one of the hardest things is the mouse and the movement of the cursor. Seeing it again and again, getting the hang of that, is quite awkward. I don't know why, but it's a motor skill that does not come naturally to a certain generation. And it's that generation that would be a perfect generation for this project, because they are really keen. They've got time, they are interested in stories, and they are interested in the places they grew up, and I think that is really beautiful. In a way,

² Mobile Narrative Application: Application on mobile phone that supports / enables Mobile Narratives

a scaling back of the technology would not hurt. For me, I would like more, because I have a fantasy. When I go onto this map, I can click on the picture of the authors, and his whole face will come up, and he or she will read the section to me. That's what I would like. I'd like a video of David Malouf, reading from Johnno about the Greek Club. So I'd like it to be even more visual and dramatic. And in a way that would take away from what I was saying before, which is that the text should do all the work. If it's going to be performative and location-based, go the whole way. Have the authors jumping out of it. It's expensive, and a time-consuming process, but it would be fun.

How could an easy version look like?

- Take the West End one. You say "Go to Avid Reader. At Avid Reader front desk, you find a map". So it's a case of going half mobile half old form. And it's a nice brochure, they get a brochure, and people feel happy because they got something for free, a nice brochure. And it has a map, and it has pictures from the places they are going to find. And then the mobile phone acts as an extra element in that process. I think that's ok. Or the first message on the mobile phone is "Go to Avid Reader. Why not have a cup of coffee?". Message two: "Walk five hundred meters up the road where you find such and such...". So where it's actual directions. For people struggling with the map, or if you don't have GPS on the phone, let's face it, a lot of people don't, that would be all right too. So my question to you is, can you have all the different things at the same time? For those of you who don't have mobile phones, you can do this, if you have a mobile phone that you want to use, do this, if you have an iPhone with a GPS... Could you have different platforms running simultaneously?

4.4. How could it be used to support the act of writing a story?

5. Paper Prototype

- 5.1. What do you think about the prototype? Does it meet your expectations?
- 5.2. What would you like to change in the prototype to support MNs more efficiently?

A.2 Transcripts of user studies

A.2.1 Kelvin Grove Urban Village I

5. Please comment on the following aspects of your reading experience:
- Did this way of reading allow you to immerse yourself within the story and the world described in the story?

A little bit.

- Did you feel you were in the real world the whole time?

I kind of got absorbed into the reading and did not pay much attention to the surroundings.

- Were you switching between both worlds?

Yeah, the part where we were reading at the steps, that helped a lot.

- Did both worlds become the same?

Not really. There was too much new stuff going on.

- Did you feel being in one world (story world/real world) with influences from the other?

I think it did not influence a lot.

6. Please state if you agree with the following statements. (1=I totally disagree, 5=I totally agree)

The requirement to go to different places in order to read the chapters was unnecessary and annoying.	<input type="checkbox"/> 1	<input checked="" type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
Being at the place where the action takes places was an enhancing and exciting feature of reading the story.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input checked="" type="checkbox"/> 4	<input type="checkbox"/> 5
Reading about a place and its history, while sitting in situ, makes it a lot more comprehensible and vivid.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input checked="" type="checkbox"/> 4	<input type="checkbox"/> 5
Changing the focus from reading on the screen to looking around to observe the environment is distracting.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input checked="" type="checkbox"/> 4	<input type="checkbox"/> 5
The instructions and restrictions of where to read the story were patronizing.	<input type="checkbox"/> 1	<input checked="" type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
The specified locations were well chosen for enhancing my enjoyment of this story.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input checked="" type="checkbox"/> 4	<input type="checkbox"/> 5
Reading on the spot does not contribute to a better understanding of the place and its history.	<input type="checkbox"/> 1	<input checked="" type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
There were no difficulties in switching between reading the story and examining the described place.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input checked="" type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5

KGUV I – Participant 1

1. Do you know more about Kelvin Grove and Brisbane after taking this walk and reading the story?

☒ Yes, because...

☐ No, because...

Yes, definitely... I don't really know much about it, to begin with. I am living in Boston.

2. Can you relate the descriptions of place and time in the story with how this area looks today? (e.g. "If you look up, straight up the hill, you will see a little beaten trail coming down from the top")?

Yeah, especially where the yellow rail at the storm drain was, with the trees to your right, that was good. I was a little confused at the last place, with the bench and the barbecue and everything... Other than just come up the hill, was there something else we were supposed to looking at? Not really?

3. Do you think the story contained enough/too many/too few descriptions about place and landscape?

☐ Enough descriptions

☐ Too many

☒ Too few

It could have a little bit more descriptions about the surroundings, but I thought more about the story than what was going on here...

4. Was it worth reading at the specified places?

Yeah, it did help.

7. Have you ever read a book on an electronic reading device (e.g. e-book reader, mobile phone) before?
☐ Yes ☒ No

8. Did you enjoy reading the story on the mobile phone?
☒ Yes, because... ☐ No, because...
Yeah, it don't know, it was just easier, to simply scroll down while reading.

9. Do you have a mobile device (e.g. mobile phone, PDA)? ☒ Yes ☐ No

10. Do you use functions other than calling or texting on your mobile device (e.g. calendar, calculator)?
☐ Yes, I use the following: _____
☒ No

11. Do you have an Internet enabled mobile device? ☐ Yes ☒ No

12. How often do you use your mobile device to request information from the Internet?
☐ Daily ☐ Several times per week
☐ 1-5 times per month ☐ Never, because _____

13. How often do you read books or stories in your leisure time?
☐ Daily ☒ Several times per week
☐ 1-5 times per month ☐ Never, because _____
As often as I can ...

14. What kinds of genre do you usually read? (Multiple selections possible)
☐ Mystery ☐ Biographies ☒ Fantasy ☐ Poetry
☒ Literary Fiction ☐ Romance Fiction ☒ Historical Fiction ☒ Science Fiction
☐ Travel Writing ☐ Non-fiction ☐ Australian Literature

15. Where do you read? (Multiple selections possible)
☒ At home
☐ Outdoors (e.g. at a beach /park): _____
☒ During travelling (e.g. in a bus/train): _____

16. How old are you? 20

17. What is your gender? ☐ Male ☒ Female

18. What is your profession / occupation? Student (Architecture)

KGUV I – Participant 2

1. Do you know more about Kelvin Grove and Brisbane after taking this walk and reading the story?

☒ Yes, because...

☐ No, because...

Yes, because I did not really know where the barracks of everything were situated... I did know that there was army people here in World War II, I didn't know where the Americans were and where the Australians where. So geographically, it helped a lot, just through my high school and through the kind of literature that I have been given just along the way, I did know sort of the whole the Americans vs. the Australians relationship and things like that. Those were the kinds of things I knew more about, but I still found it interesting, how they applied to it personal sense.

2. Can you relate the descriptions of place and time in the story with how this area looks today? (e.g. "If you look up, straight up the hill, you will see a little beaten trail coming down from the top")?

About 60% of it. The second chapter one, where we were at the yellow rail, that was really good, and also the picnic bench was good, and also the A-Block one was good. I think the first one was a bit confusing for me, because my little geographical thing was not quite on, and so I didn't know where we were meant to looking and stuff like that, and it wasn't really clear in the first one, whether we were sitting where David was meant to be sitting, or we were watching the barracks where he would have been sitting. But that was just because it was the first chapter, I guess, and we were getting used to it.

3. Do you think the story contained enough/too many/too few descriptions about place and landscape?

☐ Enough descriptions

☐ Too many

☒ Too few

I'd said that it could do with a bit more, not exactly description, but I liked it when they were like "where you are sitting now" and everything ... In the first chapter, I think it needed a bit more description, but that could just have been me not paying as much attention. But, yes, it was good, I think by the second one you just assumed that you were sitting where they were sitting, so that was not a real big problem. So you just assumed you were sitting where they were sitting, there wasn't a need for much description.

4. Was it worth reading at the specified places?

I think so. It would have been good. Especially, I guess, the more information you put in, the more complex that you make the story, the more it would assist to be in the place.

5. Please comment on the following aspects of your reading experience:

- Did this way of reading allow you to immerse yourself within the story and the world described in the story?
- Did you feel you were in the real world the whole time?
- Were you switching between both worlds?
- Did both worlds become the same?
- Did you feel being in one world (story world/real world) with influences from the other?

I think that you got immersed in the story world, when you weren't walking. When you were at the place, I got completely immersed. But then, of course, you end, you get up, you walk, follow directions with the GPS, that's not exactly 1945... Although... That wasn't such a bad thing. It was good, because you were always wondering what the next chapter would be. So that was a good thing, that it got broken up, in my opinion.

6. Please state if you agree with the following statements. (1=I totally disagree, 5=I totally agree)

The requirement to go to different places in order to read the chapters was unnecessary and annoying.	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
Being at the place where the action takes places was an enhancing and exciting feature of reading the story.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input checked="" type="checkbox"/> 5
Reading about a place and its history, while sitting in situ, makes it a lot more comprehensible and vivid.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input checked="" type="checkbox"/> 5
Changing the focus from reading on the screen to looking around to observe the environment is distracting.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input checked="" type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
The instructions and restrictions of where to read the story were patronizing.	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
The specified locations were well chosen for enhancing my enjoyment of this story.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input checked="" type="checkbox"/> 4	<input type="checkbox"/> 5
Reading on the spot does not contribute to a better understanding of the place and its history.	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
There were no difficulties in switching between reading the story and examining the described place.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input checked="" type="checkbox"/> 4	<input type="checkbox"/> 5

7. Have you ever read a book on an electronic reading device (e.g. e-book reader, mobile phone) before?

☐ Yes

☒ No

8. Did you enjoy reading the story on the mobile phone?

☒ Yes, because...

☐ No, because...

...it's small, and compact, and efficient. But I mean it could have been just the structure as well, because it was small. I don't think I would like it for a long time, but for the length, it was good. And also for the purpose, it was good.

9. Do you have a mobile device (e.g. mobile phone, PDA)?

☒ Yes

☐ No

10. Do you use functions other than calling or texting on your mobile device (e.g. calendar, calculator)?

☐ Yes, I use the following: _____

☒ No

11. Do you have an Internet enabled mobile device?

☐ Yes

☒ No

12. How often do you use your mobile device to request information from the Internet?

☐ Daily

☐ Several times per week

☐ 1-5 times per month

☐ Never, because _____

13. How often do you read books or stories in your leisure time?

☒ Daily

☐ Several times per week

☐ 1-5 times per month

☐ Never, because _____

14. What kinds of genre do you usually read? (Multiple selections possible)

☒ Mystery

☒ Biographies

☒ Fantasy

☐ Poetry

☒ Literary Fiction

☒ Romance Fiction

☒ Historical Fiction

☐ Science Fiction

☒ Travel Writing

☐ Non-fiction

☒ Australian Literature

15. Where do you read? (Multiple selections possible)

☒ At home

☒ Outdoors (e.g. at a beach/park): _____

☒ During travelling (e.g. in a bus/train): _____

Everywhere! I have a book in my bag, and even if I'm just waiting in a line, I read. So when I have the time to read, I will. Every night before bed I read, but also read anywhere, at uni if I'm waiting for a computer.

16. How old are you?

20

17. What is your gender?

☐ Male

☒ Female

18. What is your profession / occupation? Business & Journalism

KGUV 1 – Participant 3

1. Do you know more about Kelvin Grove and Brisbane after taking this walk and reading the story?

☒ Yes, because... ☐ No, because...

I think I know a little bit more about the army barracks, I didn't even know that army barracks were there.

2. Can you relate the descriptions of place and time in the story with how this area looks today? (e.g. "If you look up, straight up the hill, you will see a little beaten trail coming down from the top")?

The first chapter, it was a little bit hard for me to get in to, I was just getting used to it. The second, third, and fourth chapter I could start to relate where you were and as I read a bit further I sort of understood that era that we were in... that she couldn't tell her parents she was pregnant. That sort of gave you the idea a little more.

3. Do you think the story contained enough/too many/too few descriptions about place and landscape?

☐ Enough descriptions ☐ Too many ☒ Too few

I think it could have a little bit more.

4. Was it worth reading at the specified places?

Yes! Like I said, after the second, third, and fourth chapter I could really sit down and start imagining where I was. In the second chapter, where she is sitting on the grass and is waiting for her American friend. I could imagine her sitting where I was sitting and anything like that.

5. Please comment on the following aspects of your reading experience:

- Did this way of reading allow you to immerse yourself within the story and the world described in the story?
- Did you feel you were in the real world the whole time?
- Were you switching between both worlds?
- Did both worlds become the same?
- Did you feel being in one world (story world/real world) with influences from the other?

No, I felt like I was in the story, so I felt like I was in this story world, when I was reading a chapter. Obviously, when I was walking, I was in the real world. When you started reading the chapters, I felt like I was there, I started imagining what's happening around me. (Q: So you had the feeling that the surroundings were really like) ... that time! I sort of imagined myself as Margaret, and sort of read it that way. In the fourth chapter, how she is sitting in the barbecue area, I sort of imagined that where I was sitting.

6. Please state if you agree with the following statements. (1=I totally disagree, 5=I totally agree)

The requirement to go to different places in order to read the chapters was unnecessary and annoying.	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
Being at the place where the action takes places was an enhancing and exciting feature of reading the story.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input checked="" type="checkbox"/> 5
Reading about a place and its history, while sitting in situ, makes it a lot more comprehensible and vivid.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input checked="" type="checkbox"/> 5
Changing the focus from reading on the screen to looking around to observe the environment is distracting.	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
The instructions and restrictions of where to read the story were patronizing.	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
The specified locations were well chosen for enhancing my enjoyment of this story.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input checked="" type="checkbox"/> 4	<input type="checkbox"/> 5
Reading on the spot does not contribute to a better understanding of the place and its history.	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
There were no difficulties in switching between reading the story and examining the described place.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input checked="" type="checkbox"/> 5

7. Have you ever read a book on an electronic reading device (e.g. e-book reader, mobile phone) before?
☐ Yes ☒ No

8. Did you enjoy reading the story on the mobile phone?
☒ Yes, because... ☐ No, because...
Something different, something you haven't done before. New technology. You have to get the hang of the software, I kept scrolling up and down. But I enjoyed it, because it was something different and something I haven't tried before

9. Do you have a mobile device (e.g. mobile phone, PDA)? ☒ Yes ☐ No

10. Do you use functions other than calling or texting on your mobile device (e.g. calendar, calculator)?
☐ Yes, I use the following: _____
☒ No

11. Do you have an Internet enabled mobile device? ☒ Yes ☐ No

12. How often do you use your mobile device to request information from the Internet?
☐ Daily ☐ Several times per week
☐ 1-5 times per month ☒ Never, because
I don't how to use it and I am sure that I will cost a lot more.

13. How often do you read books or stories in your leisure time?
☐ Daily ☐ Several times per week
☐ 1-5 times per month ☐ Never, because _____
A couple per year.

14. What kinds of genre do you usually read? (Multiple selections possible)
☒ Mystery ☐ Biographies ☒ Fantasy ☐ Poetry
☐ Literary Fiction ☐ Romance Fiction ☐ Historical Fiction ☐ Science Fiction
☒ Travel Writing ☐ Non-fiction ☐ Australian Literature

15. Where do you read? (Multiple selections possible)
☒ At home
☐ Outdoors (e.g. at a beach /park): _____
☒ During travelling (e.g. in a bus/train): _____

16. How old are you? 23

17. What is your gender? ☐ Male ☒ Female

18. What is your profession / occupation? Administration officer

KGUV I – Participant 4

1. Do you know more about Kelvin Grove and Brisbane after taking this walk and reading the story?

☒ Yes, because... ☐ No, because...

Yes, definitely! About 23 years ago, I worked out here. I had a temp job, and it was at Kelvin Grove, but it was then called Brisbane College of Advanced Education. And it was kind of interesting to see it again, but I have learned more about it and taken more notice.

2. Can you relate the descriptions of place and time in the story with how this area looks today? (e.g. "If you look up, straight up the hill, you will see a little beaten trail coming down from the top")?

Yes, I guess you could, because the topography is still the same, isn't it? Yes, you can.

3. Do you think the story contained enough/too many/too few descriptions about place and landscape?

☒ Enough descriptions ☐ Too many ☐ Too few

No, I just thought each section was a bit long. I thought it maybe just were quotes from a book, but it was quite a long passage. But interesting! The last one, thought, just said "The End".

4. Was it worth reading at the specified places?

Yes, definitely! When you're reading a book, it's sometime hard to imagine, a place, but with sort of idea, it's great, you can really get the feeling of the place. A good idea!

5. Please comment on the following aspects of your reading experience:
- Did this way of reading allow you to immerse yourself within the story and the world described in the story?
 - Did you feel you were in the real world the whole time?
 - Were you switching between both worlds?
 - Did both worlds become the same?
 - Did you feel being in one world (story world/real world) with influences from the other?

I got pretty immersed in it. I don't think the outside world, the traffic, came in on you or anything. No, I got immersed, because I do in a book or story.

6. Please state if you agree with the following statements. (1=I totally disagree, 5= I totally agree)

The requirement to go to different places in order to read the chapters was unnecessary and annoying.	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
Being at the place where the action takes places was an enhancing and exciting feature of reading the story.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input checked="" type="checkbox"/> 4	<input type="checkbox"/> 5
Reading about a place and its history, while sitting in situ, makes it a lot more comprehensible and vivid.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input checked="" type="checkbox"/> 5
Changing the focus from reading on the screen to looking around to observe the environment is distracting.	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
The instructions and restrictions of where to read the story were patronizing.	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
The specified locations were well chosen for enhancing my enjoyment of this story.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input checked="" type="checkbox"/> 4	<input type="checkbox"/> 5
Reading on the spot does not contribute to a better understanding of the place and its history.	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
There were no difficulties in switching between reading the story and examining the described place.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input checked="" type="checkbox"/> 5

7. Have you ever read a book on an electronic reading device (e.g. e-book reader, mobile phone) before?

☐ Yes

☒ No

8. Did you enjoy reading the story on the mobile phone?

☒ Yes, because...

☐ No, because...

It was fine. One thing is that it's easy to carry; it's easier than a book. It's so accessible, isn't it? I wouldn't do it all the time though, but for this particular thing it was great. In bed I wouldn't want to read.

9. Do you have a mobile device (e.g. mobile phone, PDA)?

☒ Yes

☐ No

10. Do you use functions other than calling or texting on your mobile device (e.g. calendar, calculator)?

☐ Yes, I use the following: _____

☒ No

Sometimes the alarm clock, but no, not really.

11. Do you have an Internet enabled mobile device?

☐ Yes

☒ No

12. How often do you use your mobile device to request information from the Internet?

☐ Daily

☐ Several times per week

☐ 1-5 times per month

☐ Never, because _____

13. How often do you read books or stories in your leisure time?

☒ Daily

☐ Several times per week

☐ 1-5 times per month

☐ Never, because _____

14. What kinds of genre do you usually read? (Multiple selections possible)

☒ Mystery

☒ Biographies

☐ Fantasy

☐ Poetry

☒ Literary Fiction

☐ Romance Fiction

☒ Historical Fiction

☐ Science Fiction

☒ Travel Writing

☐ Non-fiction

☒ Australian Literature

15. Where do you read? (Multiple selections possible)

☒ At home

☐ Outdoors (e.g. at a beach /park): _____

☒ During travelling (e.g. in a bus/train): _____

16. How old are you?

68

17. What is your gender?

☐ Male

☒ Female

18. What is your profession / occupation? Retired (Secretary)

Further comments:

It you could just point out that they should follow the green knob.

Very enjoyable experience!

KGUV I – Participant 5

1. Do you know more about Kelvin Grove and Brisbane after taking this walk and reading the story?

☒ Yes, because... ☐ No, because...

Yes, I do, I think I know a lot more. Because it was good to see the different sides, a different time, the past and to be in the present place, and see a different side of it, which was interesting.

2. Can you relate the descriptions of place and time in the story with how this area looks today? (e.g. "If you look up, straight up the hill, you will see a little beaten trail coming down from the top")?

Yes, definitely! It was really cool! Especially the second chapter, when you look up at the dirt track that is coming down, it feels like you are exactly in the story itself and you are seeing what the character is seeing.

3. Do you think the story contained enough/too many/too few descriptions about place and landscape?

☐ Enough descriptions ☐ Too many ☒ Too few

No, I think the length was just right, it wasn't too long and it wasn't too short, but it was descriptive, which was good. But it still told the story at the same time, so it's interesting and I think it was a good balance.

More [relations to surrounding place] would have been better, because it was really cool when it mentioned the actual names like "Victoria Park Rd". Because you were actually there and those were the really exciting parts, when you could look up and be like "That's where I am". So more of those would make it even more dynamic.

4. Was it worth reading at the specified places?

Yes, you have to be in the actual place; otherwise it doesn't have the same effect.

5. Please comment on the following aspects of your reading experience:

- Did this way of reading allow you to immerse yourself within the story and the world described in the story?
- Did you feel you were in the real world the whole time?
- Were you switching between both worlds?
- Did both worlds become the same?
- Did you feel being in one world (story world/real world) with influences from the other?

I think it is a really strange space of both worlds. When you are reading the story, you feel like you are in the past, but then when you actually look up and take in the surroundings and see the new things, you are back in the present. So it's kind of a different space, it's not a fiction or non-fiction kind of thing, which was interesting. In one part in the story, one of the girls is telling a soldier that she is pregnant, and so I was reading that bit, and on the stairs next to me two students were actually having a conversation, that one of their friends had just found out that she was pregnant. So it was really tricky! Because what has changed? The story is still the same, just the surrounding is the difference, but that was really interesting.

6. Please state if you agree with the following statements. (1=I totally disagree, 5=I totally agree)

The requirement to go to different places in order to read the chapters was unnecessary and annoying.	<input checked="" type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5
Being at the place where the action takes places was an enhancing and exciting feature of reading the story.	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input checked="" type="checkbox"/> 4 <input type="checkbox"/> 5
Reading about a place and its history, while sitting in situ, makes it a lot more comprehensible and vivid.	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input checked="" type="checkbox"/> 4 <input type="checkbox"/> 5
Changing the focus from reading on the screen to looking around to observe the environment is distracting.	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input checked="" type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5
The instructions and restrictions of where to read the story were patronizing.	<input type="checkbox"/> 1 <input checked="" type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5
The specified locations were well chosen for enhancing my enjoyment of this story.	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input checked="" type="checkbox"/> 4 <input type="checkbox"/> 5
Reading on the spot does not contribute to a better understanding of the place and its history.	<input checked="" type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5
There were no difficulties in switching between reading the story and examining the described place.	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input checked="" type="checkbox"/> 4 <input type="checkbox"/> 5

7. Have you ever read a book on an electronic reading device (e.g. e-book reader, mobile phone) before?
☒ Yes ☐ No
Only academic texts, no creative ones.

8. Did you enjoy reading the story on the mobile phone?
☒ Yes, because... ☐ No, because...
Yes, it was different. I don't know, I guess it was more the surroundings. It kind of felt like you had a secret. You are doing something really secretive, and everyone is watching you. It was good, because it was a different format. You are not just flipping through pages in a book, because you are actually in the place, which makes it feel more real. You get more immersed in the story. I like that about it.

9. Do you have a mobile device (e.g. mobile phone, PDA)? ☒ Yes ☐ No

10. Do you use functions other than calling or texting on your mobile device (e.g. calendar, calculator)?
☐ Yes, I use the following: _____
☒ No
I would use some more, if I knew how to use them.

11. Do you have an Internet enabled mobile device? ☒ Yes ☐ No

12. How often do you use your mobile device to request information from the Internet?
☐ Daily ☒ Several times per week
☐ 1-5 times per month ☐ Never, because _____

13. How often do you read books or stories in your leisure time?
☒ Daily ☐ Several times per week
☐ 1-5 times per month ☐ Never, because _____

14. What kinds of genre do you usually read? (Multiple selections possible)
☐ Mystery ☒ Biographies ☐ Fantasy ☐ Poetry
☒ Literary Fiction ☐ Romance Fiction ☐ Historical Fiction ☐ Science Fiction
☒ Travel Writing ☒ Non-fiction ☐ Australian Literature

15. Where do you read? (Multiple selections possible)
☒ At home
☐ Outdoors (e.g. at a beach /park): _____
☐ During travelling (e.g. in a bus/train): _____
At the office.

16. How old are you? 22

17. What is your gender? ☐ Male ☒ Female

18. What is your profession / occupation? Student (Creative Writing)

A.2.2 Cooroy Lower Mill Site

5. Please comment on the following aspects of your reading experience:
- Did this way of reading allow you to immerse yourself within the story and the world described in the story?
 - Did you feel you were in the real world the whole time?
 - Were you switching between both worlds?
 - Did both worlds become the same?
 - Did you feel being in one world (story world/real world) with influences from the other?
 - I could picture that (*being in the story world*)
 - It was a bit hard with all the modern stuff around, all the cars, the trucks, and the sort of modern music.
 - And it would be hard with a big group
6. Did you find requirement to go to different places in order to read the chapters was unnecessary and annoying?
- Sort of... It was fun, but ...
 - It was good to see what's there
 - It would have been good, if it was a circuit.
7. Did you have any difficulties in switching between reading the story and examining the described place?
- The map kept zooming out.
8. Did you submit a comment?
- ☒ Yes ☐ No
- What kind of comment(s)?
- We submitted three. The first one, you actually have to be at the spot to submit it, we did not know that, and did not go back.

CLMS – Group 1

1. Do you know more about Cooroy and the Lower Mill Site after taking this walk and reading the story?
- ☒ Yes, because... ☐ No, because...
- Yes. It just gave you a sense of what it is (not) like and it felt that you are actually there
 - A bit. We don't even live in Cooroy, we just go to school here. And we read about stories that happened here, what they did here.
2. Can you relate the descriptions of place and time in the story with how this area looks today?
- Maybe some of the buildings. Maybe because of all the wood, the blinds, the windows, because we saw some at the Chinese restaurant
3. Do you think the story contained enough/too many/too few descriptions about place and landscape?
- ☐ Enough descriptions ☐ Too many ☒ Too few
- I think it could have included a bit more, but I still found it pretty detailed.
4. Was it worth reading at the specified places?
- No, it was fun, but I reckon walking there and back and there and back was a bit...(negative expression)
 - If it had been from here to there to there to over there (*pointing to locations in a circuit*) and then back here, not just seeing the same thing...
 - The first paragraph, we were at the Chinese restaurant, and it was talking about the Cafés, and it must have been where the Cafés were.
 - It would have been way better, instead of reading it, to have a voice thing.
 - When we went to the Memorial Hall, the actual music started playing when we sat there.
 - You could have little motion sensors, and if you sit down, it starts playing

17. How often do you use your mobile device to request information from the Internet?
- ☐ Daily ☐ Several times per week
☐ 1-5 times per month ☒ Never, because _____
-
18. How often do you read books or stories in your leisure time?
- ☐ Daily ☐ Several times per week ☒ Never
☐ Several times per month ☐ Several times per year
19. Where do you read? (Multiple selections possible)
- ☐ At home
☐ Outdoors (e.g. at a beach/park): _____
☐ During travelling (e.g. in a bus/train): _____
-
20. How old are you? 13
21. What is your gender? ☒ Male ☐ Female
22. What is your profession / occupation? Students

9. Do you think the necessity of being on the spot for commenting was annoying?
- No, it wasn't
 - It's good having the story saying actually that you have to go there, you can't just read it on the way, but I reckon you should be able to comment anyway.
 - But after you read the story.
10. Did you feel urged or motivated to comment, because you could only comment on the spot and could not procrastinate while writing the comment?
- Yes, exactly.
11. Do you think your comments were influenced by the fact you were still seeing the place while you were writing, and/or by the fact that you had to submit shortly after reading the associated part of the story?
- It was mostly because we were looking for our stories in it.
12. Have you ever read a book on an electronic reading device (e.g. e-book reader, mobile phone) before?
- ☒ Yes ☐ No
- We got a touch-screen computer at home.
13. Did you enjoy reading the story on the mobile phone?
- ☒ Yes, because... ☐ No, because...
- I don't like having a big pack of paper, and having it carrying around.
 - And you can't really vandalise that. A book, you could rip, you accidentally fold it up.
-
14. Do you have a mobile device (e.g. mobile phone, PDA)? ☒ Yes ☐ No
15. Do you use functions other than calling or texting on your mobile device (e.g. calendar, calculator)?
- ☒ Yes, I use the following: Music, Camera,
☐ No
16. Do you have an Internet enabled mobile device? ☐ Yes ☒ No
- I could never figure out how to get on the Internet
 - With the new Hiptops, they are going to MSN chat and other online chats.

CLMS – Group 2

1. Do you know more about Cooroy and the Lower Mill Site after taking this walk and reading the story?
 - ☐ Yes, because... ☐ No, because...
 - No, because I have grown up here.
 - A little bit more.
 - If I was them and saying yes, I would probably say yes because they have taken two walks into town, being here all the time and walking back and forth, having a look around and seeing the different shops, so you get more used to Cooroy.
 2. Can you relate the descriptions of place and time in the story with how this area looks today?
 - Yes
 3. Do you think the story contained enough/too many/too few descriptions about place and landscape?
 - ☐ Enough descriptions ☐ Too many ☐ Too few

(*not really answered by participants*)
 4. Was it worth reading at the specified places? Did it make a difference being there?
 - Yes
 - A little bit.
 - She said in a comment, that by being at the place she could visualize what it was actually like in her head. Even though it's newer now, she could visualize the old.
5. Please comment on the following aspects of your reading experience:
 - Did this way of reading allow you to immerse yourself within the story and the world described in the story?
 - Did you feel you were in the real world the whole time?
 - Were you switching between both worlds?
 - Did both worlds become the same?
 - Did you feel being in one world (story world/real world) with influences from the other?
 - We were outside the memorial hall, actually loud music was going on, so we could not really hear much
 - It was a little bit distracting when people walked past
 - Some of the people that walked past just stared at us, for some reason
 6. Do you think the requirement to go to different places in order to read the chapters was unnecessary and annoying?
 - I liked it
 - At least, we didn't have to sit in the classroom
 7. Did you have any difficulties in switching between reading the story and examining the described place?
 - Not really
 8. Did you submit a comment?
 - ☒ Yes ☐ No

What kind of comment(s)?

 - Only one, but a big one

17. How often do you use your mobile device to request information from the Internet?
- ☐ Daily ☐ Several times per week
- ☐ 1-5 times per month ☐ Never, because _____
- Never
- Several times per week
-
18. How often do you read books or stories in your leisure time?
- ☐ Daily ☐ Several times per week ☐ Never
- ☐ Several times per month ☐ Several times per year
- I don't
- Couple of times a week
19. Where do you read? (Multiple selections possible)
- ☒ At home
- ☐ Outdoors (e.g. at a beach/park): _____
- ☒ During travelling (e.g. in a bus/train): _____
-
20. How old are you? 13
21. What is your gender? ☒ Male (3x) ☒ Female (1x)
22. What is your profession / occupation? Students

9. Do you think the necessity of being on the spot for commenting was annoying?
- We did it, when we got back. Because we were excited about hearing the next part of the story, so we did not stop and did the comments.
10. Did you feel urged or motivated to comment, because you could only comment on the spot and could not procrastinate while writing the comment?
- There was so much to read. And by the time we finished reading, it was about time to go.
11. Do you think your comments were influenced by the fact you were still seeing the place while you were writing, and/or by the fact that you had to submit shortly after reading the associated part of the story?
- Don't think so.
- Probably not.
12. Have you ever read a book on an electronic reading device (e.g. e-book reader, mobile phone) before?
- ☐ Yes ☒ No
13. Did you enjoy reading the story on the mobile phone?
- ☒ Yes, because... ☐ No, because...
- Yes, it was good.
-
14. Do you have a mobile device (e.g. mobile phone, PDA)? ☒ Yes ☐ No
15. Do you use functions other than calling or texting on your mobile device (e.g. calendar, calculator)?
- ☒ Yes, I use the following: Video, Games, Camera, Music, Calculator
- ☐ No
16. Do you have an Internet enabled mobile device? ☒ Yes ☐ No

CLMS – Group 3

- Do you know more about Cooroy and the Lower Mill Site after taking this walk and reading the story?
☐ Yes, because... ☐ No, because...
 - Not so much about Cooroy, but more about the workers. It had to do with Lower Mill Site, but it wasn't Cooroy as a whole.
 - More about personalities and what they did.
- Can you relate the descriptions of place and time in the story with how this area looks today?
 - Probably not, because it is a lot different now.
 - Yes, you could I think.
- Do you think the story contained enough/too many/too few descriptions about place and landscape?
☐ Enough descriptions ☐ Too many ☐ Too few
 - It sort of disjoint it a little bit. If it had all the place you had to go to next to each other, and you had not stop reading the story and start again, you could just read it as one big thing as you moved along, then it would probably make more sense. It still made sense, but you didn't have to remember what you just finished reading, you just keep reading.
 - If you environment is what you are reading about, it's easy to relate to what you are reading about.
 - You felt like "Oh that is where that was"
 - Yes, it was more fun, and more involving; it involved you and what you did. To get the next part of the story you had to walk around and all that.
 - It was more interactive; you didn't just sit down and read the story.
 - Kind of like a treasure hunt. You had to go to each place to find the magical ending.
 - Something what would make the story better would be, if there were sound effects

Was there any of the spaces that was more effective than others?

 - Lower Mill Site, because it has not changed much
 - The Memorial Hall with its bushes

- Please comment on the following aspects of your reading experience:
 - Did this way of reading allow you to immerse yourself within the story and the world described in the story?
 - Did you feel you were in the real world the whole time?
 - Were you switching between both worlds?
 - Did both worlds become the same?
 - Did you feel being in one world (story world/real world) with influences from the other?
 - Because the stories weren't really short, they weren't just one paragraph, because there were a few paragraphs for each page, then you did get involved with the story rather than just reading it. You were there for a while, just reading that, and you were in the place that was taking part in.
- Did you think the requirement to go to different places in order to read the chapters was unnecessary and annoying?
 - Not really, it was fun.
 - It was a bit, having to go from here up there to here up there.
 - You started here, but the start wasn't here. So if you started at the Chinese shop, it would have been more fun, or easier, and if it goes in a circuit.
- Did you have any difficulties in switching between reading the story and examining the described place?
 - Not really, because we sort of looked at the place first, and then read the stories. Like with the Hall, we looked at the Hall and all that, and then read the story after that. So we sort of got to know the place, and then we read about what we already knew.
- Did you submit a comment?

☒ Yes ☐ No

What kind of comment(s)?

 - We did three, because one did not work. Because we did not know that we had to stay there, so we walked away and tried to submit the Chinese one half way down to here.

The opportunity to make a comment, is that a good thing?

 - I reckon it's good for the people that made it to get feedback, so next time you read it it'll be better.
 - If they wanted, they could write what they want to add into it, and the editors could edit that

9. Do you think the necessity of being on the spot for commenting was annoying?

- No, not really.
- If we hadn't to rush around, it would have been all right. But we were running from place to place.

10. Did you feel urged or motivated to comment, because you could only comment on the spot and could not procrastinate writing the comment?

11. Do you think your comments were influenced by the fact you were still seeing the place while you were writing, and/or by the fact that you had to submit shortly after reading the associated part of the story?

- It was fresh in your mind, what you just read and saw, so it was easier than doing the whole circuit and coming back and commenting, because you already knew what were going to comment about.

12. Have you ever read a book on an electronic reading device (e.g. e-book reader, mobile phone) before?

☐ Yes ☒ No

13. Did you enjoy reading the story on the mobile phone?

☒ Yes, because... ☐ No, because...

- Yes because you could just flip through the pages.
- It is only smaller; a book pretty much does the same job. It's easier and it's more portable.
- It's easier to navigate via a digital device, than a physical device.

14. Do you have a mobile device (e.g. mobile phone, PDA)? ☒ Yes ☐ No

15. Do you use functions other than calling or texting on your mobile device (e.g. calendar, calculator)?

☒ Yes, I use the following: Games, Music, Alarm clock, and Videos

☐ No

16. Do you have an Internet enabled mobile device? ☐ Yes ☒ No

17. How often do you use your mobile device to request information from the Internet?

☐ Daily ☐ Several times per week
☐ 1-5 times per month ☒ Never, because _____

18. How often do you read books or stories in your leisure time?

☐ Daily ☐ Several times per week ☐ Never
☐ Several times per month ☐ Several times per year
 - Always
 - My grandma works in a book shop and gives me all the good books
 - Not much

If somebody gave you an iPhone like mine, what would you do with it? What would you use it for?

- Sell it.
- I wouldn't read books on it.
- Games, Music, Videos, GPS

19. Where do you read? (Multiple selections possible)

☒ At home
☐ Outdoors (e.g. at a beach/park): _____
☒ During travelling (e.g. in a bus/train): _____
 - Everywhere

20. How old are you? 14: 1x 13:3x

21. What is your gender? ☒ Male (2x) ☒ Female (2x)

22. What is your profession / occupation? Students

A.2.3 Kelvin Grove Urban Village II

- Did this way of reading allow you to immerse yourself within the story and the world described in the story?
 - Did you feel you were in the real world the whole time?
 - Were you switching between both worlds?
 - Did both worlds become the same?
 - Did you feel being in one world (story world/real world) with influences from the other?
- Yes, you switched between both worlds. While you read you are in the story, but as soon as you start walking, you just go back, with all the people and stuff.
9. Did you submit a comment? What do you think about the necessity of being on the spot for commenting?
- No, because I didn't get the first question, because I didn't find out that you can scroll through the story. But anyways, somehow I did not feel like commenting on the story. It's a story, so don't know what to comment.
 - I just wanted to read the story, and did not feel like adding comments.
 - I have never commented on a story before, I just had no motivation to add a comment to a story, because it's a story.
10. Did you feel urged or motivated to comment, because you could only comment on the spot and within a certain timeframe (because could not procrastinate while writing the comment)?
- Often the possibility of submitting comments *anywhere, anytime* means *not now, maybe later, probably not at all*. Do you think forcing people to do it *here and now* can motivate people to engage?
11. Do you think your comments were influenced by the fact that you were still seeing the place while you were writing, and/or by the fact that you had to submit shortly after reading the associated part of the story?
12. Have you ever read a book on an electronic reading device (e.g. e-book reader, mobile phone) before? Did you enjoy reading the story on the mobile phone?
- Yes, it was good. But it's not the same like having a book. The contrast sometimes was a little bit bad, because the morning sun was shining. It was okay, because the story was not that long, and especially the first two chapters were very easy to read. But the two following ones, where like "scroll down, scroll down, could be finished right now".

KGUV II – Participant 1

1. Do you know more about Kelvin Grove and Brisbane after taking this walk and reading the story?
 - Yes, a little bit. I haven't read the first two chapters completely, so there was something missing.
2. Could you relate the descriptions of place and time in the story with how this area looks today? (e.g. "If you look up, straight up the hill, you will see a little beaten trail coming down from the top")?
 - Yes, that was really cool. For example, the one comment "you can't have a look at this, because of the trees and the buildings now, but if you walk there..." , that was cool.
3. Do you think the story contained enough/too many/too few descriptions about place and landscape?
 - It was ok from the amount of information. But that was really cool, I really liked this, the references to the actual place, and the first reference to the time about the sun in the morning, that was cool.
4. Was it worth reading at the specified places?
 - Yes!

Did you like any of the places better than others?

 - Not really.
5. What do you think about the temporal descriptions in the story (e.g. "It felt odd to be at the top end of the hill this early in the middle of the day")? Did it give you a good feeling about the temporal setting?
 - Yes, that was really cool. That was the best thing.
6. Do you think the story contained enough/too many/less temporal descriptions?
 - I mean, it could be more, if it makes sense. Because that's the cool thing about reading the book while on the move.
7. Was it worth reading at the specified times?
 - Were there any chapters that were especially useful to read at the specified times?
 - I am not sure, because I haven't read the first two chapters. Not really, maybe because of the story. There was one reference about the morning sun; maybe for a different story you can have better time references.
 - It's all in the morning, but it could also play in the evening or the afternoon, so there's no real need the time in the morning.
 - It's hard to say. If I hadn't read it in the morning, the first reference wouldn't have made sense.
8. Please comment on the following aspects of your reading experience:

KGUV II – Participant 1 (Survey)

1. Please state if you agree with the following statements.
(1=I totally disagree, 5= I totally agree)

The requirement to go to different places in order to read the chapters was unnecessary and annoying.	<input type="checkbox"/> 1 <input checked="" type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5
Being at the place where the action takes places was an enhancing and exciting feature of reading the story.	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input checked="" type="checkbox"/> 5
Reading the story at the specified times did make the story more exciting.	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input checked="" type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5
Reading about a place and its history, while sitting in situ, makes it a lot more comprehensible and vivid.	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input checked="" type="checkbox"/> 4 <input type="checkbox"/> 5
Changing the focus from reading on the screen to looking around to observe the environment is distracting.	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input checked="" type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5
Being able to comment only in situ and within a certain timeframe positively influences the comments, as everything is still fresh in the mind.	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input checked="" type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5
There were no difficulties in switching between reading the story and examining the described place.	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input checked="" type="checkbox"/> 5
The instructions and restrictions of where to read the story were patronizing.	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input checked="" type="checkbox"/> 4 <input type="checkbox"/> 5
Reading the story at the time the action is happening positively contributes to making the story more comprehensible and vivid.	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input checked="" type="checkbox"/> 4 <input type="checkbox"/> 5
The requirement of reading the chapters at specific times is unnecessary and annoying.	<input type="checkbox"/> 1 <input checked="" type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5
The specified locations were well chosen for enhancing my enjoyment of this story.	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input checked="" type="checkbox"/> 4 <input type="checkbox"/> 5
Reading on the spot does not contribute to a better understanding of the place and its history.	<input checked="" type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5
The time and place restrictions of comments were motivating me to contribute, as they did not allow procrastination.	<input checked="" type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5
Writing on the go was cumbersome, and I would have preferred to submit comments later on.	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input checked="" type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5

2. Do you have a mobile device (e.g. mobile phone, PDA)? ☒ Yes ☐ No
3. Do you use functions other than calling or texting on your mobile device (e.g. calendar, calculator)?
☒ Yes, I use the following: Different iPhone apps, Internet, Mail
☐ No
4. Do you have an Internet enabled mobile device? ☒ Yes ☐ No
5. How often do you use your mobile device to request information from the Internet?
☒ Daily ☐ Several times per week
☐ 1-5 times per month ☐ Never, because _____
6. How often do you read books or stories in your leisure time?
☐ Daily ☒ Several times per week
☐ 1-5 times per month ☐ Several times per year
☐ Never, because _____
7. Where do you read? (Multiple selections possible)
☒ At home
☒ Outdoors (e.g. at a beach /park): _____
☒ During travelling (e.g. on a bus /train): _____
8. How old are you? 26
9. What is your gender? ☒ Male ☐ Female
10. What is your profession / occupation? PhD student

KGUV II – Participant 2

1. Do you know more about Kelvin Grove and Brisbane after taking this walk and reading the story?
How did you like the walk?
 - Yes, it was okay. But time is little. I feel a little bit tired after this walk. Maybe if I start from the first point, it would have been better. Maybe it was just because I walked down and up and down...
 - Yes, if the story is true. But anyhow, I know more spots. And I did not find the second location, the wall. I found the yellow rail, but I did not see a wall.
2. Could you relate the descriptions of place and time in the story with how this area looks today? (e.g. "If you look up, straight up the hill, you will see a little beaten trail coming down from the top")?
 - Not really. I did not look up to see the view very often. I was interested only in the story. But I have a few impressions of the place with the bus stop. The place where Margaret is sitting at. When I was reading, I imagined a little, but I did not think about actually standing up and looking at the view of Red Hill the story described. I just knew that.
3. Do you think the story contained enough/too many/too few descriptions about place and landscape?
 - I think it depends on the aims of the writer of the story. I don't think one story can contain all the landscape. So maybe you can, if the story is designed to function like that, maybe you need more landscape descriptions.
4. Was it worth reading at the specified places?
Did you like any of the places better than others?
 - Yes. There's the Gray Gum Park, I like that place. Maybe some other locations within the campus, not just A block, maybe inside the campus buildings.
 Why did you like it?
 - Firstly, I got to see the gulf place, and then I know that A block used to be a teaching institute.
 Did it help you imagining the story?
 - Yes, it was helpful. It's very interesting. Yes, it's impressive to be in exactly that spot.
5. What do you think about the temporal descriptions in the story (e.g. "It felt odd to be at the top end of the hill this early in the middle of the day")? Did it give you a good feeling about the temporal setting?
 - I think it's good, because I actually felt the sun.
 - I don't think the story just takes place in the morning. At first, it takes place in the morning, and then the rest a few days, a few weeks later. And I don't remember the last chapter, when the last chapter is happening.
6. Do you think the story contained enough/too many/less temporal descriptions?
 - The first chapter, I read that very carefully. And then I felt a little bit out of time, so I hurried up, and just wanted to get the main line of the story. I did not pay a lot of attention to the time in the following chapters.
7. Was it worth reading at the specified times?
 - Yes, but maybe you can have longer time intervals. Because you need to read and to comment, and to actually go to the place.
 - Maybe five more minutes for each chapter, but the last chapter is quite short, so I finished the whole process five minutes in advance. It took me the longest for the first chapter.
 Were there any chapters that were especially useful to read at the specified times?
 - The first chapter and the third. The first chapter because of the morning sun, and I saw the barracks, the buildings, that was nice, because of that point, because I actually found it. I did not find the exact place for the second chapter, so I did not feel a lot about that.
8. Please comment on the following aspects of your reading experience:
 - Did this way of reading allow you to immerse yourself within the story and the world described in the story?
 - Did you feel you were in the real world the whole time?
 - Were you switching between both worlds?
 - Did both worlds become the same?
 - Did you feel being in one world (story world/real world) with influences from the other?
 - I think I almost totally immersed in the story world.
 So the surrounding was not disturbing you?
 - No.
9. Did you submit a comment? What do you think about the necessity of being on the spot for commenting?
 - I don't think it's necessary. Maybe you can comment while you are walking. We are sending text messages all the time when we are walking.
10. Did you feel urged or motivated to comment, because you could only comment on the spot and within a certain timeframe (because could not procrastinate while writing the comment)?
 - Not really. Actually, I didn't know how important the comments were.
11. Do you think your comments were influenced by the fact that you were still seeing the place while you were writing, and/or by the fact that you had to submit shortly after reading the associated part of the story?
 - Yes, actually I think that if I had a further thought, the comments would have been better. I just mean, because of the time and pace, I had to comment very quickly, so it's just my first impression, the first thing that came to my mind. Maybe when I walk to the next place, I still thought about the story and could have had more comments.

I am not sure why you need the comments. Do you really care about what people think about the story itself or about the relationship between the story and the place?

I see the possibility of submitting comments *anywhere, anytime* means *not now, maybe later, probably not at all*. Do you think forcing people to do it *here and now* can motivate people to engage?

Yes, that's quite smart. But you don't need to be at that location, you can say you need to submit your comment before you start reading the next chapter. And because I sort of worried about "how far is the next location". And I can think about it while I am walking.

Have you ever read a book on an electronic reading device (e.g. e-book reader, mobile phone) before?

No, not really.

Do you enjoy reading the story on the mobile phone?

If it is a one time thing, or for a special purpose. An advantage is that it's convenient. But usually I prefer to read in books. Disadvantages are small characters, and sometimes I just like the feeling of books. And the loading took about 30 seconds... the loading was too slow?

A bit.

And besides that, do you think it was intuitive? Or which parts would you like to see changed?

It's ok. It's quite easy to use. But I did not find the punctuation, the comma...

KGUV II – Participant 2 (Survey)

1. Please state if you agree with the following statements.
(1=I totally disagree, 5= I totally agree)

The requirement to go to different places in order to read the chapters was unnecessary and annoying.	<input type="checkbox"/> 1 <input checked="" type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5
Being at the place where the action takes places was an enhancing and exciting feature of reading the story.	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input checked="" type="checkbox"/> 5
Reading the story at the specified times did make the story more exciting.	<input type="checkbox"/> 1 <input checked="" type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5
Reading about a place and its history, while sitting in situ, makes it a lot more comprehensible and vivid.	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input checked="" type="checkbox"/> 5
Changing the focus from reading on the screen to looking around to observe the environment is distracting.	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input checked="" type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5
Being able to comment only in situ and within a certain timeframe positively influences the comments, as everything is still fresh in the mind.	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input checked="" type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5
There were no difficulties in switching between reading the story and examining the described place.	<input type="checkbox"/> 1 <input checked="" type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5
The instructions and restrictions of where to read the story were patronizing.	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input checked="" type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5
Reading the story at the time the action is happening positively contributes to making the story more comprehensible and vivid.	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input checked="" type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5
The requirement of reading the chapters at specific times is unnecessary and annoying.	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input checked="" type="checkbox"/> 4 <input type="checkbox"/> 5
The specified locations were well chosen for enhancing my enjoyment of this story.	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input checked="" type="checkbox"/> 4 <input type="checkbox"/> 5
Reading on the spot does not contribute to a better understanding of the place and its history.	<input checked="" type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5
The time and place restrictions of comments were motivating me to contribute, as they did not allow procrastination.	<input type="checkbox"/> 1 <input checked="" type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5
Writing on the go was cumbersome, and I would have preferred to submit comments later on.	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input checked="" type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5

2. Do you have a mobile device (e.g. mobile phone, PDA)? ☒ Yes ☐ No
3. Do you use functions other than calling or texting on your mobile device (e.g. calendar, calculator)?
☐ Yes, I use the following: _____
☒ No
4. Do you have an Internet enabled mobile device? ☒ Yes ☐ No
5. How often do you use your mobile device to request information from the Internet?
☐ Daily ☐ Several times per week
☐ 1-5 times per month ☐ Never, because I didn't find it necessary.
6. How often do you read books or stories in your leisure time?
☐ Daily ☒ Several times per week
☐ 1-5 times per month ☐ Several times per year
☐ Never, because _____
7. Where do you read? (Multiple selections possible)
☒ At home
☒ Outdoors (e.g. at a beach /park): _____
☐ During travelling (e.g. on a bus/train): _____
8. How old are you? 25
9. What is your gender? ☐ Male ☒ Female
10. What is your profession / occupation? PhD student

KGUV II – Participant 3

- I tried to submit comments, and it did not work. As soon as it hit 9:50, couldn't submit like 9:51 for the first chapter. And then I gave up doing comments. I had one negative experience, and so it was no comments for the rest. My comment was that there was a spelling mistake, in the story.
- It would be really good if there was an audio mode for the comments.

Would you also like an audio mode for the story itself?

- Maybe, I don't know what it would be like. But reading is pretty good, because form the pictures in your own head. Depends what you like reading on.
- And was rushing to get to those places, which was annoying. And I really wanted to get a drink, and I couldn't until the end. So if you could do like "pause", I am getting a drink, so it's like "pause for 5 minutes", that's all we need to have. Because I got a phone call, I would not exactly read the book, and then I run out of time. So a pause feature would be kind of necessary.

1. Do you know more about Kelvin Grove and Brisbane after taking this walk and reading the story?
 - Yes, sure, I learned that the landmarks can't be seen because of what's here today. I could not identify the big tall tree, that they were talking about, it wasn't described well enough for the location. It was kind of quaint, that they mentioned so often "you could see this except for this". And I had no idea of where the barracks were. I just sat down somewhere close enough, I could not identify them.
 - Pictures! If it's a telephone that can do this, use pictures.
 - And the map... I zoomed out by accident once, and there was not "go back" to standard resolution. So I had to know "All right, I am in Kelvin Grove", so I had to zoom in to Kelvin Grove. But that would have been tricky for someone old.
2. Could you relate the descriptions of place and time in the story with how this area looks today? (e.g. "If you look up, straight up the hill, you will see a little beaten trail coming down from the top")?
 - No, I couldn't find the trail. I thought it might be a golf pathway that was paved with concrete. The only other thing I could see up there was a footpath on the right site, and a concrete golf path. So I thought that must have been the trail at some point, but there wasn't a trail, was there?
3. Do you think the story contained enough/too many/too few descriptions about place and landscape?
 - Depends. Probably enough. However, the description was not overly precise or well composed to identify the objects.
4. Was it worth reading at the specified places?
 - Did you like any of the places better than others?
 - If I were able to find things, it would have been nice. One of the detractors was: the first chapter I read and had a seat to sit on and it was semi-shaded, the second place was shaded but I had to sit on the ground, it was all right when I sat down, but I would have been nice to have a note "there are no seats here", so that

an old person does not get there and has to stand all the time. Then I walked up the big long hill and had to sit in the sun on the steps, which was annoying.

5. What do you think about the temporal descriptions in the story (e.g. "It felt odd to be at the top end of the hill this early in the middle of the day")? Did it give you a good feeling about the temporal setting?
 - No real reason at all for the particular times. It could have been 1pm, it would have been more appropriate if it had dusk, because chapter two was set when she was waiting for classes, wasn't it? And wasn't it in the afternoon? There was no real relation.
 - In the first chapter it says "the morning sun shines in your eyes" but the sun was behind me. From the second chapter on, I could not pick up when it was set, I thought it was in the afternoon.
 - If you want people to read all the chapters shortly after each other, that's cool, but I don't find a reason why to read it at 9am.
 - Timing-wise, make it a bit longer, especially if someone is likely to be distracted.
6. Do you think the story contained enough/too many/less temporal descriptions?
7. Was it worth reading at the specified times?
8. Were there any chapters that were especially useful to read at the specified times? Please comment on the following aspects of your reading experience:
 - Did this way of reading allow you to immerse yourself within the story and the world described in the story?
 - Did you feel you were in the real world the whole time?
 - Were you switching between both worlds?
 - Did both worlds become the same?
 - Did you feel being in one world (story world/real world) with influences from the other?
9. Did you submit a comment? What do you think about the necessity of being on the spot for commenting?
 - I can see the reasoning behind it, but if anything fails, like I nearly gave up when it said your name is required... But maybe give a little bit more guidance.
10. Did you feel urged or motivated to comment, because you could only comment on the spot and within a certain timeframe (because could not procrastinate while writing the comment)?
 - Often the possibility of submitting comments *anywhere, anytime* means *not now, maybe later, probably not at all*. Do you think forcing people to do it *here and now* can motivate people to engage?
11. Do you think your comments were influenced by the fact that you were still seeing the place while you were writing, and/or by the fact that you had to submit shortly after reading the associated part of the story?
 - No. It could, if I were able to identify things. People think differently. If I think about something, I like to think about it for a few hours, and would like to comment then.
12. Have you ever read a book on an electronic reading device (e.g. e-book reader, mobile phone) before? Did you enjoy reading the story on the mobile phone?

No. I would get a headache, if I had to read too much. The text was very small, and I could not zoom it. I was worried about my eyes. It was easy to scroll, and it was lighter than a book. And I would have liked to have gaps between paragraphs.

KGUV II – Participant 3 (Survey)

1. Please state if you agree with the following statements.
(1=I totally disagree, 5= I totally agree)

The requirement to go to different places in order to read the chapters was unnecessary and annoying.	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input checked="" type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5
Being at the place where the action takes places was an enhancing and exciting feature of reading the story.	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input checked="" type="checkbox"/> 4 <input type="checkbox"/> 5
Reading the story at the specified times did make the story more exciting.	<input checked="" type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5
Reading about a place and its history, while sitting in situ, makes it a lot more comprehensible and vivid.	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input checked="" type="checkbox"/> 5
Changing the focus from reading on the screen to looking around to observe the environment is distracting.	<input type="checkbox"/> 1 <input checked="" type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5
Being able to comment only in situ and within a certain timeframe positively influences the comments, as everything is still fresh in the mind.	<input checked="" type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5
There were no difficulties in switching between reading the story and examining the described place.	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input checked="" type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5
The instructions and restrictions of where to read the story were patronizing.	<input type="checkbox"/> 1 <input checked="" type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5
Reading the story at the time the action is happening positively contributes to making the story more comprehensible and vivid.	<input checked="" type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5
The requirement of reading the chapters at specific times is unnecessary and annoying.	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input checked="" type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5
The specified locations were well chosen for enhancing my enjoyment of this story.	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input checked="" type="checkbox"/> 5
Reading on the spot does not contribute to a better understanding of the place and its history.	<input type="checkbox"/> 1 <input checked="" type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5
The time and place restrictions of comments were motivating me to contribute, as they did not allow procrastination.	<input checked="" type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5
Writing on the go was cumbersome, and I would have preferred to submit comments later on.	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input checked="" type="checkbox"/> 5

2. Do you have a mobile device (e.g. mobile phone, PDA)? ☒ Yes ☐ No
3. Do you use functions other than calling or texting on your mobile device (e.g. calendar, calculator)?
☒ Yes, I use the following: currency, calendar, alarm clock, torch
☐ No
4. Do you have an Internet enabled mobile device? ☒ Yes ☐ No (but does not work)
5. How often do you use your mobile device to request information from the Internet?
☐ Daily ☐ Several times per week
☐ 1-5 times per month ☒ Never, because it fails to load google.
6. How often do you read books or stories in your leisure time?
☐ Daily ☒ Several times per week
☐ 1-5 times per month ☐ Several times per year
☐ Never, because _____
7. Where do you read? (Multiple selections possible)
☒ At home
☐ Outdoors (e.g. at a beach /park): _____
☒ During travelling (e.g. on a bus/train): _____
8. How old are you? 26
9. What is your gender? ☒ Male ☐ Female
10. What is your profession / occupation? PhD student

KGUV II – Participant 4

1. Do you know more about Kelvin Grove and Brisbane after taking this walk and reading the story?
 - A bit more. I knew some bit about the history before, for instance that precinct used to be a barrack, but I did not know there were US barracks as well. Yes, I learned a bit from it.
 2. Could you relate the descriptions of place and time in the story with how this area looks today? (e.g. "if you look up, straight up the hill, you will see a little beaten trail coming down from the top")?
 - Yes, I thought this was actually quite well done in the story. It was integrating it well, the current geography with history. I thought that was very well done.
 3. Do you think the story contained enough/too many/too few descriptions about place and landscape?
 - I think so. If there was more of it, I think it would be too much. I think it is the right amount of detail. If it were for a longer story, you would put more details in. But for the length it was, it was the right amount.
 4. Was it worth reading at the specified places?
 - Did you like any of the places better than others?
 - Yes definitely. It made it more like a treasure hunt. You got a reward for going to different places, and you got more of a feel for what was at the location and the setting being at the site.
 - From a practical perspective, around the golf course and Victoria Park it had a bit more shade than the other ones this morning. It was nice, warm and sunny, and it was matched with the feel of the story. But just from a practical perspective, I was getting a bit warm on the steps at A block.
 5. What do you think about the temporal descriptions in the story (e.g. "It felt odd to be at the top end of the hill this early in the middle of the day")? Did it give you a good feeling about the temporal setting?
 - I think on a day like today, when it would be kind of parallel of what was happening today weather-wise, you get more of a feel for the setting. It makes sense. It probably would be hard in different situations, like a night-time story or things like that. I also like chapters being available only for a certain time. It was kind of fitting in how the story progressed.
 6. Do you think the story contained enough/too many/less temporal descriptions?
 7. Was it worth reading at the specified times?
 - Were there any chapters that were especially useful to read at the specified times?
 - It keeps you focused, it keeps you moving. But also having enough time to go through the stage your at. Because I was reading fairly quickly, but I could also go back and go through it all, because I knew that the next chapter might not be available for five minutes.
 - The first one, definitely. Because it obviously introduced everything. Starting off knowing where things are happening, but also setting and the time, and have you experiencing it, made it easy, because you knew all that for the next three chapters.
 - I did not really have to wait that much, in the end I kind of caught up with it. It's a reasonably long walk between chapters, and I wasn't rushing with my comments and I probably wrote far too long comments.
- Did the fact that you had to wait for chapters contribute to an exciting experience?
- Yes it did. I was definitely thinking "where is this going to go" and wanting to get the next thing happening in the story.
- Please comment on the following aspects of your reading experience:
- Did this way of reading allow you to immerse yourself within the story and the world described in the story?
 - Did you feel you were in the real world the whole time?
 - Were you switching between both worlds?
 - Did both worlds become the same?
 - Did you feel being in one world (story world/real world) with influences from the other?
 - Today, at the site, I was totally focused on the story, and not really noticing what was going on in the real world. It helped that it was early in the morning without many distractions, and it was really nice being outside and just having natural ambient noises. Walking between sites, you obviously get the real world back. And within the story, there remains some connect between the real world and the world of the story, because it refers back to the current geography. For instance at the A block, there is the reference to the church in Redhill, which you cannot see because of the new buildings and things from where you are sitting. So I think, there was some immersion, but probably also a mix of real world and story world.
9. Did you submit a comment? What do you think about the necessity of being on the spot for commenting?
 - Yes. I think it's good to be on the spot to respond at the time rather than do a whole bunch.
 - If I had to do loads of things to do, and if I had twenty minutes to go or two weeks to go, I am less likely to do it at the spot. And I am just dealing with the small chunk of information I got, so it's easier to respond to, and maybe clarify thoughts what was going on in the story, or the experience of it. When I found out that there were going to be comments, I was not sure about it, but I actually thought the way it was done helped.
 10. Did you feel urged or motivated to comment, because you could only comment on the spot and within a certain timeframe (because could not procrastinate while writing the comment)?
 - Often the possibility of submitting comments *anywhere, anytime* means *not now, maybe later, probably not at all*. Do you think forcing people to do it *here and now* can motivate people to engage?
 - I think this is one case, because I was failing clear of the deadline. It did not really affect how I was going and there was not really a chance to miss it because of the

ments. So I am not really sure about that one. If I had been close to the deadline, I might have rushed my comments a bit more, but I tried to make them fairly clear.

Do you think your comments were influenced by the fact that you were still seeing the place while you were writing, and/or by the fact that you had to submit shortly after reading the associated part of the story?

Yes definitely. If you ask me to comment some things this afternoon, I will probably give very different answers, and especially without having the text and the site on hand to refer to. I think is beneficial to do it there and then, instead of doing it at a later time.

Have you ever read a book on an electronic reading device (e.g. e-book reader, mobile phone) before? Did you enjoy reading the story on the mobile phone?

No I haven't.

I did, with some reservations. I probably would like to read anything longer than this. It was easier than I thought it was going to be. I was not sure about adjusting to the small screen and things like that. No, I enjoyed it.

What are the advantages?

Portability! I had done this properly, just carrying around the water bottle and the phone, it would have been a lot easier than carrying around a book. I don't know whether my response to it was any different because it was on the phone rather than on paper. Maybe because of the novelty of it for me, I actually paid more attention and read it more thoroughly than if it was on paper, because I read so much.

What are the disadvantages like the small screen size?

That was actually not an issue for me in the end, I was not sure whether it was or wasn't. It was okay for me.

KGUV II – Participant 4 (Survey)

1. Please state if you agree with the following statements.
(1=I totally disagree, 5= I totally agree)

The requirement to go to different places in order to read the chapters was unnecessary and annoying.	<input type="checkbox"/> 1	<input checked="" type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
Being at the place where the action takes places was an enhancing and exciting feature of reading the story.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input checked="" type="checkbox"/> 5
Reading the story at the specified times did make the story more exciting.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input checked="" type="checkbox"/> 4	<input type="checkbox"/> 5
Reading about a place and its history, while sitting in situ, makes it a lot more comprehensible and vivid.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input checked="" type="checkbox"/> 5
Changing the focus from reading on the screen to looking around to observe the environment is distracting.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input checked="" type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
Being able to comment only in situ and within a certain timeframe positively influences the comments, as everything is still fresh in the mind.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input checked="" type="checkbox"/> 4	<input type="checkbox"/> 5
There were no difficulties in switching between reading the story and examining the described place.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input checked="" type="checkbox"/> 4	<input type="checkbox"/> 5
The instructions and restrictions of where to read the story were patronizing.	<input type="checkbox"/> 1	<input checked="" type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
Reading the story at the time the action is happening positively contributes to making the story more comprehensible and vivid.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input checked="" type="checkbox"/> 4	<input type="checkbox"/> 5
The requirement of reading the chapters at specific times is unnecessary and annoying.	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
The specified locations were well chosen for enhancing my enjoyment of this story.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input checked="" type="checkbox"/> 4	<input type="checkbox"/> 5
Reading on the spot does not contribute to a better understanding of the place and its history.	<input type="checkbox"/> 1	<input checked="" type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
The time and place restrictions of comments were motivating me to contribute, as they did not allow procrastination.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input checked="" type="checkbox"/> 5
Writing on the go was cumbersome, and I would have preferred to submit comments later on.	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5

2. Do you have a mobile device (e.g. mobile phone, PDA)? ☒ Yes ☐ No
3. Do you use functions other than calling or texting on your mobile device (e.g. calendar, calculator)?
☒ Yes, I use the following: Calendar, Calculator, Timer, Browser
☐ No
4. Do you have an Internet enabled mobile device? ☒ Yes ☐ No
5. How often do you use your mobile device to request information from the Internet?
☐ Daily ☒ Several times per week
☐ 1-5 times per month ☐ Never, because _____
6. How often do you read books or stories in your leisure time?
☐ Daily ☒ Several times per week
☐ 1-5 times per month ☐ Several times per year
☐ Never, because _____
7. Where do you read? (Multiple selections possible)
☒ At home
☒ Outdoors (e.g. at a beach /park): Cafés, Parks
☒ During travelling (e.g. on a bus/train): On longer train / plane journeys
8. How old are you? 23
9. What is your gender? ☒ Male ☐ Female
10. What is your profession / occupation? PhD student

A.2.4 West End Literary Map

8. You could have walked to the next place, while thinking about your comment or while writing it. Did you do it? Why / why not?
9. Often the possibility of submitting comments *anywhere, anytime* means *not now, maybe later, probably not at all*. Do you think forcing people to do it *here and now* can motivate people to engage? Did you feel urged or motivated to comment, because you could only comment on the spot?
 - Yes, very definitely. You could put it off, like you say, and then never get round to it. But if you do it there and then, that's good, for me anyway.
 - Yes, probably. Like if I had to wait until I got home, I probably would not do it. No I think it's good to do it on the spot.
10. What was your experience with the character restrictions of your comments?
 - I was not restricted, that was fine. 140 characters, that's quite a lot, isn't it? I don't think you need to write a lot in a comment, I think you need to keep it short and get to the point. So I was not restricted today.
11. Did the character restriction influence your motivation to contribute?
 - Did you really feel restricted?
 - Or did you like it since you did not have the pressure to write that much?
 - Would you have preferred unlimited comments?
 - In a way, I think it's good. Otherwise you could get carried away and write pages. But if you are out in the streets like that, you don't want to write a book yourself, do you? You just want to keep it short and to the point. So no, I wouldn't feel restricted.
12. Had the character limitation an effect on the valuation of your own comment?
13. Imagine you were only able to submit your comments within ten minutes after you read the text about a place. What would you think of such a restriction?
 - Would you feel too stressed? Or would it motivate you to immediately sit down and comment?
 - No, I would not like that, I think. Then I would get nervous and would think "I have to hurry", and maybe not do it properly.
14. Have you ever read a book on an electronic reading device (e.g. e-book reader, mobile phone) before?
 - No, I have never read a story.

Did you enjoy reading the story on the mobile phone?

- Yes, I did. That was good. I was surprised.

What were the advantages / disadvantages?

- Because it's handy. It's not fighting the wind. It's just easier.
- I am just not very good with the scrolling, like going backwards and forwards. But if I learned that, it would be all right.

WELM – Participant 1

1. Do you feel you know more about West End and Brisbane's literature after taking this walk and reading the story?
 - Yes, I do. What I thought was great, was seeing things. Not only did I get literature from it, but also I got an idea of West End better. I haven't been here for years.
2. What do you think about reading a text at a place that was closely connected to the author (e.g. at Estelle Pinney's house)? Does it affect your reading experience?
 - I thought it was great. I did put a comment that it would be fun to know if anybody lives there now. It looked abandoned. A very dear friend of mine is a very good friend of Estelle's, so there was that connection too. But it was great reading it there, lovely!
3. What was your experience when you were reading an extract of a story that took place in the area you were walking through (e.g. reading about the Greek Club while standing in front of it)?
 - Could you relate the descriptions of the place in the extracts with how this area looks today?
 - I really like it. The only one, the one mentioning the swimming pool, we think was not really relevant. I think it's great reading where you are.
4. Was it worth reading at the specified places?
 - Did you like any of the places better than others?
 - Perhaps I liked Estelle Pinney's place. Yes, I liked Estelle's house, I liked it around there. It was the nostalgia, I suppose, you know sitting there where she was born - great! And it's a nice old house. And I know this has got nothing to do with it, we walked down Edmondstone Street and there is number 12. It's just a name of David Malouf's books: he called it 12 Edmondstone Street, that's where he lived. And now it's a factory. I sort of thought this might be nice to bring it in, even though it's a horrible factory now. But people could compare to see what things were and what they are now.
5. Did you submit a comment? How did you feel about writing on the mobile phone?
 - Good, it was okay. I am a typist, so it did not bother me. That was fine.
6. What do you think about the idea of forcing people to comment while they are in situ, instead of letting them submit their contribution from their computer at home?
 - How do your comments differ from comments that you would have submitted from your computer at home?
 - I would rather do it on the spot, because then it's fresh in my mind. If I got home, I maybe would not have the same spontaneous feeling. So I think it's better to comment on the spot.
7. Do you think your comments were influenced by the fact you were still seeing the place while you were writing, and/or by the fact that you had to submit shortly after reading about the place?
 - Yes, definitely, I think so.

WELM – Participant 1 (Survey)

1. Please state if you agree with the following statements.
(1=I totally disagree, 5= I totally agree)

The requirement to go to the actual places in order to read about them was unnecessary and annoying.	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
Being at the place with a relation to a story or an author was enhancing and exciting.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input checked="" type="checkbox"/> 5
Reading about a place and its history, while sitting in situ, makes it a lot more comprehensible and vivid.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input checked="" type="checkbox"/> 5
Changing the focus from reading on the screen to looking around to observe the environment is distracting.	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
There were no difficulties in switching between reading the story and examining the described place.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input checked="" type="checkbox"/> 5
Being able to comment only in situ positively influences the comments, as everything is still fresh in the mind.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input checked="" type="checkbox"/> 5
Being able to comment only in situ increased my motivation to submit and contribute immediately.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input checked="" type="checkbox"/> 5
The character limitation of the comments was unnecessary and annoying.	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
The character limitation of the comments relieved me of the burden of writing a long text.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input checked="" type="checkbox"/> 5
The character limitation strengthened the feeling that my comment met the expectations and was valuable.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input checked="" type="checkbox"/> 5
Writing on the go was cumbersome, and I would have preferred to submit comments later on.	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5

2. Do you have a mobile device (e.g. mobile phone, PDA)? ☒ Yes ☐ No
3. Do you use functions other than calling or texting on your mobile device (e.g. calendar, calculator)?
☐ Yes, I use the following: _____
☒ No
4. Do you have an Internet enabled mobile device? ☐ Yes ☒ No
5. How often do you use your mobile device to request information from the Internet?
☐ Daily ☐ Several times per week
☐ 1-5 times per month ☒ Never, because I haven't got it
6. How often do you read books or stories in your leisure time?
☒ Daily ☐ Several times per week
☐ 1-5 times per month ☐ Several times per year
☐ Never, because _____
7. Where do you read? (Multiple selections possible)
☒ At home
☐ Outdoors (e.g. at a beach /park): _____
☒ During travelling (e.g. in a bus/train): Train, plane
8. How old are you? 68
9. What is your gender? ☐ Male ☒ Female
10. What is your profession / occupation? Retired

WELM – Participant 2 & 3

1. Do you feel you know more about West End and Brisbane's literature after taking this walk and reading the story?
2. What do you think about reading a text at a place that was closely connected to the author (e.g. at Estelle Pinney's house)? Does it affect your reading experience?
3. What was your experience when you were reading an extract of a story that took place in the area you were walking through (e.g. reading about the Greek Club while standing in front of it)?
Could you relate the descriptions of the place in the extracts with how this area looks today?
4. Was it worth reading at the specified places?
Did you like any of the places better than others?
 - I loved it! I think West End is a great area for it. I think this is good. First, I did find the map confusing, but that's just because I had expanded it too much, and I did not see all the icons. I also thought it might be easier for someone like me, if they were numbered. So if the starting point is one, and then I go to two, three, four, etc. And also if it perhaps changes colour if you have already completed that part. So just little things like that, but as far as interest, I thought it was really great. It made me think about West End a lot more. For an area I have been coming to for years, there are a lot of things I did not know. I did not know that the pool was there, I did not know anything about Musgrave Park. Yes, it really does make you stop and think like a tourist in your hometown. It's really great!
 - Because it's hard to look at the area like a tourist if you live here all the time.
 - Yes, that's it. You don't take in all the details. I especially like any part that does have a bit of a story, like the story in Musgrave Park. And then the excerpt from Johnno with the Greek Club. I liked that because it really does set the scene a lot more, rather than just information about a building.
 - ... or the writer lived here. Even though it was a beautiful house, I was like "okay". But maybe people that are interested in the writer would find this fascinating. It's a different audience thing. I definitely agree, if it has people talking about a story for that particular spot, it's a lot more interesting. I was not aware of the person's (Estelle Pinney) work and things like that, so it was "okay some writer who wrote that passage lived here". Okay, that's interesting if I knew and I was a fan of that person, then it would probably really interesting.
 - And the passage was lovely. Because I don't have any link to her, it did not sort of grab me. But then I did it with David Malouf either, I know his name but I haven't read his work. But because I had been to the Greek Club, it was really nice to then imagine that when back in his time. I really like that. But I think the time was good, it was just about 50 minutes. That's a nice period of time, like under an hour is good. And it was really nice for me, as there are no hills.
5. Did you submit a comment? How did you feel about writing on the mobile phone?
 - Yes, we tried to. They were a bit fundamental. I was like "ah, go back, I want to delete this, I want to make it shorter because I have written too much. So there are probably heaps of spelling mistakes.
- We've submitted them for a lot of places.
6. What do you think about the idea of forcing people to comment while they are in situ, instead of letting them submit their contribution from their computer at home? How do your comments differ from comments that you would have submitted from your computer at home?
 - I don't know if on the spot is the best thing. Because for me, I did a comment on Musgrave Park, and then I wanted to do one on the Greek Club as well, but we wanted to keep going because we were conscious of time. So when I was walking along and waiting for the lights, I then wanted to do the Greek Club but I couldn't, because I was too far away from the spot.
 - Maybe if we had the options to do it "post". Maybe not before you have read it, but post at anytime.
 - Because it would be really nice now to be able to sit here and put in my thoughts about the Greek Club. I really liked the excerpt from Johnno, so I could put that in now. So I would like to do it after.
7. Do you think your comments were influenced by the fact you were still seeing the place while you were writing, and/or by the fact that you had to submit shortly after reading about the place?
 - Probably.
 - I would have more time to think about it.
 - That's it; I like to reflect a bit before I put anything down, rather than on the spot. But then sometimes the spontaneous things are good too, isn't it?
 - I just put in the first thing that came to my head. If I had sat down and reflected on it, and had time to do that, then I probably could have given a lot better input.
 - You could have walked to the next place, while thinking about your comment or while writing it. Did you do it? Why / why not?
 - 9. Often the possibility of submitting comments *anywhere*, *anytime* means *not now*, *maybe later*, *probably not at all*. Do you think forcing people to do it *here and now* can motivate people to engage? Did you feel urged or motivated to comment, because you could only comment on the spot?
 - You also limited with the word limit. Because there was one, probably from Musgrave Park, when I was typing too much. For me, I did not think about the restriction, until I went over it.
 - That's what I did as well. If I had more to say, I would be like "arrh".
 - So it was only in one case where I had more to say. But apart from that, I did not think about it.
 - Yes, that's right.
 - 10. What was your experience with the character restrictions of your comments?
 - You also limited with the word limit. Because there was one, probably from Musgrave Park, when I was typing too much. For me, I did not think about the restriction, until I went over it.
 - That's what I did as well. If I had more to say, I would be like "arrh".
 - So it was only in one case where I had more to say. But apart from that, I did not think about it.
 - Yes, that's right.
 - 11. Did the character restriction influence your motivation to contribute? Did you really feel restricted?
 - Or did you like it since you did not have the pressure to write that much? Would you have preferred unlimited comments?
 - 12. Had the character limitation an effect on the valuation of your own comment?
 - 13. Imagine you were only able to submit your comments within ten minutes after you read the text about a place. What would you think of such a restriction? Would you feel too stressed? Or would it motivate you to immediately sit down and comment?

14. Have you ever read a book on an electronic reading device (e.g. e-book reader, mobile phone) before?

- Never. I have never used an iPhone before.
- No

Did you enjoy reading the story on the mobile phone?

- Yes, I did actually. It took me a bit to get used to, but it is easy to use once you started doing it.
- I think it's the novelty of doing it. It's something different. It's the novelty you enjoy.
- And it's so easy. If you think about using this opposed to a travel guide when you are travelling, this would have been wonderful to have when travelling to cities, bringing up information about sights right there and then. Yes, I liked using this.

What were the advantages / disadvantages?

- What if you can't read the text, because it is too small? That could be a disadvantage for people that can't read it.
Once you learn how to use it, I guess, it's a lot easier. At the moment, it takes us a while to mock around with the scrolls and things like that. But I think once you are more into it, it is quite easy.

What kind of features would you like to have in the application?

- Probably the numbering of locations, and the changing of colour, so that you know where you up to. Maybe a line of your route where you have to go.
- Yes, maybe a red line
- That could make it idiot proof.
- Also if an image is possible as well. So if actually pull up the destination, you've got a photo there. Because with 21 Franklin Street, with her house, I knew what it looked like from seeing Sue's photos, but it would be really good if you could have an image in there.
- Especially if there are close together, then you know where to look at.

WELM – Participant 2 (Survey)

1. Please state if you agree with the following statements.
(1=I totally disagree, 5= I totally agree)

The requirement to go to the actual places in order to read about them was unnecessary and annoying.	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
Being at the place with a relation to a story or an author was enhancing and exciting.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input checked="" type="checkbox"/> 5
Reading about a place and its history, while sitting in situ, makes it a lot more comprehensible and vivid.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input checked="" type="checkbox"/> 5
Changing the focus from reading on the screen to looking around to observe the environment is distracting.	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
There were no difficulties in switching between reading the story and examining the described place.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input checked="" type="checkbox"/> 5
Being able to comment only in situ positively influences the comments, as everything is still fresh in the mind.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input checked="" type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
Being able to comment only in situ increased my motivation to submit and contribute immediately.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input checked="" type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
The character limitation of the comments was unnecessary and annoying.	<input type="checkbox"/> 1	<input checked="" type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
The character limitation of the comments relieved me of the burden of writing a long text.	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
The character limitation strengthened the feeling that my comment met the expectations and was valuable.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input checked="" type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
Writing on the go was cumbersome, and I would have preferred to submit comments later on.	<input type="checkbox"/> 1	<input checked="" type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5

A combination of both, in situ & post, would be best to allow for a reflective contribution as well

2. Do you have a mobile device (e.g. mobile phone, PDA)? ☒ Yes ☐ No
3. Do you use functions other than calling or texting on your mobile device (e.g. calendar, calculator)?
☒ Yes, I use the following: calendar
☐ No
4. Do you have an Internet enabled mobile device? ☒ Yes ☐ No
5. How often do you use your mobile device to request information from the Internet?
☐ Daily ☐ Several times per week
☐ 1-5 times per month ☒ Never, because I spend so much time at my computer
6. How often do you read books or stories in your leisure time?
☐ Daily ☐ Several times per week
☒ 1-5 times per month ☐ Several times per year
☐ Never, because _____
7. Where do you read? (Multiple selections possible)
☒ At home
☒ Outdoors (e.g. at a beach /park): park, in the garden
☐ During travelling (e.g. in a bus/train): _____
8. How old are you? 31
9. What is your gender? ☐ Male ☒ Female
10. What is your profession / occupation? Student Support Officer

WELM – Participant 3 (Survey)

1. Please state if you agree with the following statements.
(1=I totally disagree, 5= I totally agree)

The requirement to go to the actual places in order to read about them was unnecessary and annoying.	<input type="checkbox"/> 1	<input checked="" type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
Being at the place with a relation to a story or an author was enhancing and exciting.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input checked="" type="checkbox"/> 5
Reading about a place and its history, while sitting in situ, makes it a lot more comprehensible and vivid.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input checked="" type="checkbox"/> 5
Changing the focus from reading on the screen to looking around to observe the environment is distracting.	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
There were no difficulties in switching between reading the story and examining the described place.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input checked="" type="checkbox"/> 5
Being able to comment only in situ positively influences the comments, as everything is still fresh in the mind.	<input type="checkbox"/> 1	<input checked="" type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
Being able to comment only in situ increased my motivation to submit and contribute immediately.	<input type="checkbox"/> 1	<input checked="" type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
The character limitation of the comments was unnecessary and annoying.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input checked="" type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
The character limitation of the comments relieved me of the burden of writing a long text.	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
The character limitation strengthened the feeling that my comment met the expectations and was valuable.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input checked="" type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
Writing on the go was cumbersome, and I would have preferred to submit comments later on.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input checked="" type="checkbox"/> 5

2. Do you have a mobile device (e.g. mobile phone, PDA)? ☒ Yes ☐ No
3. Do you use functions other than calling or texting on your mobile device (e.g. calendar, calculator)?
☐ Yes, I use the following: _____
☒ No
4. Do you have an Internet enabled mobile device? ☐ Yes ☒ No
5. How often do you use your mobile device to request information from the Internet?
☐ Daily ☐ Several times per week
☐ 1-5 times per month ☒ Never, because I don't have the function on my mobile.
6. How often do you read books or stories in your leisure time?
☐ Daily ☐ Several times per week
☐ 1-5 times per month ☒ Several times per year
☐ Never, because _____
7. Where do you read? (Multiple selections possible)
☒ At home
☐ Outdoors (e.g. at a beach /park): _____
☐ During travelling (e.g. in a bus/train): _____
8. How old are you? 23
9. What is your gender? ☐ Male ☒ Female
10. What is your profession / occupation? Admin

WELM – Participant 4

1. Do you feel you know more about West End and Brisbane's literature after taking this walk and reading the story?
 - Yes, I learned a few things, definitely. Estelle Pinney's house in 21 Franklin Street, I did not know about her at all. I didn't take notes, I tried to do it mentally, like "oh chase her up that would be interesting". I've read Johnno before, but it was nice to have the memory refreshed and look at the Greek Club. The other passage that was about the Greek Club, I had no idea about, so that was new. The sad Musgrave Park story, I do vaguely remember that going down, but I have kind of forgotten it. So it some sense new information, in some sense remembering. In other sense like Avid and Bent books, they are common and I used to go there, so that was nothing new.
 2. What do you think about reading a text at a place that was closely connected to the author (e.g. at Estelle Pinney's house)? Does it affect your reading experience?
 - Yes, I think that was a good idea having both, a taste of what they did and physical site to link to that. Yes, that was good.
 3. What was your experience when you were reading an extract of a story that took place in the area you were walking through (e.g. reading about the Greek Club while standing in front of it)?

Could you relate the descriptions of the place in the extracts with how this area looks today?

 - I suppose you do a kind of compare and contrast. I noticed one of the questions at the Greek Club was "does this still hold true to the site". And it was "no, not all all", the Greek Club was playing pop music, and it did not have any of the mystiques that it had in the passage. But it was still interesting to look at the differences over time. It was interesting. It was good. It was definitely good to be able to read a passage and link it to a place, and go "wow, how times have changed".
 4. Was it worth reading at the specified places?

Did you like any of the places better than others?

 - Yes, I think so. It just added a little extra. Well, for example, you showed the West End swimming pool, and there was no passage or anything, and it was like "okay, that's the pool", moving right along. Whereas with the Greek Club, it was like "oh okay, how meaningful". It definitely added something.
 - I liked the Greek Club the best, and Estelle Pinney's house.
 5. Did you submit a comment? How did you feel about writing on the mobile phone?
 - Yes, I did. It was fine. I was probably having a good time, because it was the first time I was using an iPhone and getting confident about it. And at the Greek Club I went over and start editing my sentences. But yes, I did not mind writing comments. It was fun to interact.
6. What do you think about the idea of forcing people to comment while they are in situ, instead of letting them submit their contribution from their computer at home? How do your comments differ from comments that you would have submitted from your computer at home?
 - I think if you are going to make them comment at all, better make them comment on the spot, while they are having the experience. Otherwise it just become something else on their to-do list, like "oh yes, I will comment later". And because you are interacting with the immediate environment that way, so better do it on the spot.
 7. Do you think your comments were influenced by the fact you were still seeing the place while you were writing, and/or by the fact that you had to submit shortly after reading about the place?
 - Don't know. Yes, probably. But slightly, not in all cases. Let's say in the case of the Greek Club, where it's asking in what ways is it different, you are actually there, you are looking, you are thinking, you are hearing, and you are using your senses. So in that respect probably. You might not have engaged all those sense at home, but just relied on your memory. But in other case, the answer would be the same. In cases where it more relies on a preformed opinion, like what does Avid mean to you in terms of place and that sort of things. You are in situ, but the opinion is already formed. In that case it would have been the same. Whereas something like the Greek Club, it's probably a less formed opinion. Being in the situation, you are engaging more senses and less opinion.
 - For example the Musgrave Park one, without the story, just like "this is Musgrave Park, what do you think?", it would have been a completely different response. As opposed to "this is Musgrave Park, here is some information about the history", is a totally different kind of feeling.
 8. You could have walked to the next place, while thinking about your comment or while writing it. Did you do it? Why / why not?

Often the possibility of submitting comments *anywhere*, *anytime* means *not now*, *maybe later*, *probably not at all*. Do you think forcing people to do it *here and now* can motivate people to engage? Did you feel urged or motivated to comment, because you could only comment on the spot?

 - You know, I was trying to be good and follow instructions. So I was going to comment, because I have been asked to comment. If it was like comment if you want, I probably would not have commented. I think people are lazy. We have our little thought bubbles, but I probably would not have said anything, or it might have been a one word response, or three words like "this is good"/"this is not". Some of the questions were asking for your opinion and why, probably would not have bothered with they why. You know, would just have given an opinion. Or maybe not commented at all, just because of laziness, really. If I had been asked to do it later, it would have been like "yes, yes, I will get around to that", "guilt, guilt, why haven't I done it yet", "oh tomorrow". So yes, if it is required, there and then is much better.
 - I don't know if it's that influential. I think what would influence the laziness is "would you please comment? Thank you!", "I need you to comment".
 - "commenting is mandatory". That turns it into "all right, I engage". If it is optional, instantly it becomes a more lazy thing. Maybe no for everybody. Some people like

to put their two sentences wherever, and some are just quite. I am one of the quite ones.

10. What was your experience with the character restrictions of your comments?

- Mostly it that was fine, except at the Greek Club, where I found myself quite long sort of thoughtful sentences. I mean, I did not go that overboard, but I could not submit, there were too many characters.

11. Did the character restriction influence your motivation to contribute?

Did you really feel restricted?

Or did you like it since you did not have the pressure to write that much?

Would you have preferred unlimited comments?

- Not really.
- Yes, that's good. It's good to know that you are only requested to write something short. So yes, it probably unconsciously relieved me from that burden. I don't twitter, but that's about the same word length, isn't it? So I suppose it would work for people that sort of quickly twitter.

12. Had the character limitation an effect on the valuation of your own comment?

13. Imagine you were only able to submit your comments within ten minutes after you read the text about a place. What would you think of such a restriction?

Would you feel too stressed? Or would it motivate you to immediately sit down and comment?

- It would motivate to do it immediately. If I was having any technical difficulties, I would be stuck like "ah, what I am going to do?" Or "can't submit, too many characters", "ah, I am running out of time". But mostly, it would motivate me to get it done.

14. Have you ever read a book on an electronic reading device (e.g. e-book reader, mobile phone) before?

- No, I haven't. Interestingly, a friend of mine just bought an iPhone. And we were at the art gallery the other day, and he was like "look, I have downloaded all these books". And I was like "have you read any of them?", and he is going "no!". And we sort of looked at it, and the idea of reading a book on an iPhone does not sound like something fun to me. You can almost feel you eyes straining. I much more rather read an actual physical book.

Did you enjoy reading the story on the mobile phone?

- Small passages are fine. I don't mind reading my horoscope on a telephone, but if I'm going to do a study in astrology, then I'd like to get the books. Something small is fine, something big no way.

What were the advantages / disadvantages?

- Oh yes, if it is a short one, you can do it while you are in transit, you can do it while you are walking along. As long as it is a short text, it's fine, it's convenient. (Disadvantages?) Nothing I can think of, no it was fine.

WELM – Participant 4 (Survey)

1. Please state if you agree with the following statements.
(1=I totally disagree, 5= I totally agree)

The requirement to go to the actual places in order to read about them was unnecessary and annoying.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input checked="" type="checkbox"/> 4	<input type="checkbox"/> 5
Being at the place with a relation to a story or an author was enhancing and exciting.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input checked="" type="checkbox"/> 5
Reading about a place and its history, while sitting in situ, makes it a lot more comprehensible and vivid.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input checked="" type="checkbox"/> 5
Changing the focus from reading on the screen to looking around to observe the environment is distracting.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input checked="" type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
There were no difficulties in switching between reading the story and examining the described place.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input checked="" type="checkbox"/> 4	<input type="checkbox"/> 5
Being able to comment only in situ positively influences the comments, as everything is still fresh in the mind.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input checked="" type="checkbox"/> 4	<input type="checkbox"/> 5
Being able to comment only in situ increased my motivation to submit and contribute immediately.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input checked="" type="checkbox"/> 4	<input type="checkbox"/> 5
The character limitation of the comments was unnecessary and annoying.	<input type="checkbox"/> 1	<input checked="" type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
The character limitation of the comments relieved me of the burden of writing a long text.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input checked="" type="checkbox"/> 5
The character limitation strengthened the feeling that my comment met the expectations and was valuable.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input checked="" type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
Writing on the go was cumbersome, and I would have preferred to submit comments later on.	<input type="checkbox"/> 1	<input checked="" type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5

2. Do you have a mobile device (e.g. mobile phone, PDA)? ☒ Yes ☐ No
3. Do you use functions other than calling or texting on your mobile device (e.g. calendar, calculator)?
☒ Yes, I use the following: Wake up Alarm!
☐ No
4. Do you have an Internet enabled mobile device? ☐ Yes ☒ No
5. How often do you use your mobile device to request information from the Internet?
☐ Daily ☐ Several times per week
☐ 1-5 times per month ☒ Never, because N/A
6. How often do you read books or stories in your leisure time?
☒ Daily ☐ Several times per week
☐ 1-5 times per month ☐ Several times per year
☐ Never, because _____
7. Where do you read? (Multiple selections possible)
☒ At home
☐ Outdoors (e.g. at a beach /park): _____
☒ During travelling (e.g. in a bus/train): _____
8. How old are you? 36
9. What is your gender? ☐ Male ☒ Female
10. What is your profession / occupation? Phd Student

WELM – Participant 5

1. Do you feel you know more about West End and Brisbane's literature after taking this walk and reading the story?
 - Yes, the significance of certain dwellings, more about the associated literature related to those dwellings. These are the main things.
 - I'm actually, I suppose, maybe a slightly more unique subject. I have actually lived in that area before, so I know a little bit more about it. And I was actually around when one of David Malouf's books, his memoirs on 12 (*adapted/corrected*) Edmondstone Street, was published. So I kind of expected to see 12 Edmondstone Street on the tour, that was the only thing. Then I guess, the park and the pool added some historical elements to the walk, but I couldn't necessarily place their literary importance. I mean I know the park was described in one of the comments, but I can't recall if that was related to an extract. But apart from that, it was interesting.
2. What do you think about reading a text at a place that was closely connected to the author (e.g. at Estelle Pinney's house)? Does it affect your reading experience?
 - It certainly gives it another dimension. It gives you a sense of place and history. And it makes you want to investigate further, I guess. You might go and lend the book or buy the book, from which this was related to. That was good. In fact, I am pretty sure I bought my father a copy of Johnno when I was quite young. I felt it was a good work, but I did not really understand the association with this Brisbane area.
3. What was your experience when you were reading an extract of a story that took place in the area you were walking through (e.g. reading about the Greek Club while standing in front of it)?
 - Could you relate the descriptions of the place in the extracts with how this area looks today?
 - Yes, that was interesting. I have actually been a patron of this particular location in the past, so that was interesting. I could understand. I think, the fact that people want to see this as exotic or unique in the context of post World War II Brisbane. It's a testament to the fact that it is still there, and in fairly unchanged forms. And it's an interesting position between its location and Musgrave Park, you got the original owners and the new immigrants across the road from each other. They are eyeballing each other each day.
4. Was it worth reading at the specified places?
 - Did you like any of the places better than others?
 - What I found frustrating was, I was conscious of time, so as I walked I wanted to go back and remind myself, because I was trying to write and walk. Then I found that technology would not allow me, I had to go back to the address, within a certain radius. I found that a bit frustrating.
 - Some of the extracts could have been a bit shorter. Maybe that's all relative to what people consider to be appropriate to engender whatever emotional feeling they are trying to get from information. But short and sharp is always good for me.
- There was a reference at the Pinney's house to the Greek Club. And then I was at the Greek Club and it was whole new setting, but I could not go back and revisit the previous comment.
- You are there in front of the actual setting; it's a strange sense of linking it all in, I suppose. If you were from another country, I would imagine it might give you a sense of being somewhere different and know a bit more about it. Everybody likes to know a little bit of unique information about the place they are in, so that it's not just another dwelling or another home, but there's a history associated with it.
- I like seeing bookshops, because they draw in an audience as well. When you are in front of a historical location, there is a kind of anonymity in a sense. But if you are actually in a bookshop, somewhere like Bent Books, there's a certain clientele that is drifting through. It makes you feel a little bit more engaged with the actual setting. You are seeing people you think are local; they might have similar interests; they are just interesting because they are people. So when you are walking past static sort of locations, it's interesting, but there's a distance between you and the actual place. So I like the interaction more. I like the cultural setting of the actual bookshops a bit more.
- Did you submit a comment? How did you feel about writing on the mobile phone?
 - Yes I did. I found it plunky. I don't know if it's a thing with my fingers or not, but I found it frustrating at times. Just in terms of parsing and that sort of things. It was easy to make mistakes. I tried to use my pen, but it wouldn't work. It only seemed to respond to human touch. I thought I could write faster using this small pointed object. I had to repeat things. I don't know what happened to my comments regarding Bent Books. I tried to submit them several times, but it just did not seem to want to accept it, so I eventually moved on. I kept editing it back, because I did not realize that the 140 characters were for the complete tour, is that right? No, per comment? I don't know what happened then.
6. What do you think about the idea of forcing people to comment while they are in situ, instead of letting them submit their contribution from their computer at home?
 - How do your comments differ from comments that you would have submitted from your computer at home?
 - I think that's a bit frustrating. It would all depend on how long you want to spend. You might find that it wasn't giving you the flexibility that you liked.
7. Do you think your comments were influenced by the fact you were still seeing the place while you were writing, and/or by the fact that you had to submit shortly after reading about the place?
 - I suppose so. You might think a little bit more about the location, and you might be therefore tempted to write more considered comments.
8. You could have walked to the next place, while thinking about your comment or while writing it. Did you do it? Why / why not?
9. Often the possibility of submitting comments *anywhere, anytime* means *not now, maybe later, probably not at all*. Do you think forcing people to do it *here and now* can motivate people to engage? Did you feel urged or motivated to comment, because you could only comment on the spot?

- Oh yes, time is of the essence. I think you are probably more likely to get feedback but making it part of the actual tour. But I think people would probably resist being compelled to do too much. Maybe there ought to be an option of multiple choice as well. Depending on what the purpose of the feedback is, what you require to know, how you aggregate all that information, and what that ultimately becomes. Whether or not it's just a big repository in a database somewhere, or whether or not someone then uses this information to do something more tangible with.
 - You know, just a multiple choice: "Did you find this interesting?". Often questionnaires and surveys that I filled in give you the option, you get a basic sort of response, and if people want to go on and they can. You could go like "did you find this interesting?", and you might see "yes", then it could say "do you want to make a further comment?". This sometimes might lead them into it.
10. What was your experience with the character restrictions of your comments?
- Well, there were some places I wanted to write more about, but it seemed that I overran my allocation. Then when I tried to edit it back, that's when I seemingly had a problem. The technology did not allow to submit the comments. So in some places there seemed to be lots to write about it. In others, e.g. in Pinney's house in Franklin Street, there was not a lot of information about it.
11. Did the character restriction influence your motivation to contribute?
- Did you really feel restricted?
- Or did you like it since you did not have the pressure to write that much?
- Would you have preferred unlimited comments?
- Did it relieve you from the burden of writing too much?
- Oh yes. You know the parameters, and therefore you have to think a bit more about what you want to write. If you really want to convey something, then you have to choose your words carefully.
12. Had the character limitation an effect on the valuation of your own comment?
13. Imagine you were only able to submit your comments within ten minutes after you read the text about a place. What would you think of such a restriction?
- Would you feel too stressed? Or would it motivate you to immediately sit down and comment?
- I don't think that would be helpful. What I wanted to do was to go back and re-reference the comments; the information about the location. After a certain time it becomes quite a demanding mental exercise to keep remembering exactly all that was said. If you are on the go, if you got distractions... If you are doing it by yourself, it's not a big thing, but if you are with other people. That's what I found when I started off. I don't even remember reading the question about Avid Reader, I don't think my question related to the question at all, because I was accosted by someone. I think it's easy to get distracted, so I don't think time limits are good.
14. Have you ever read a book on an electronic reading device (e.g. e-book reader, mobile phone) before?
- Not yet
- Did you enjoy reading the story on the mobile phone?
- Okay.
- What were the advantages / disadvantages?
- I think, with a book you can read more information at once, and you have a contextual setting. You are constantly flicking backwards and forwards, going up and down the page.
 - It's quick, I suppose. I think landscape would be a better format; it would be easier to read, because it's a more familiar.
 - I don't know how you can make it more intuitive. It's just the whole technique, it takes a while to get your fingers and your thumbs coordinated so you can use it to maximum effect. There's a lot of stumbling around, so that's why it's plunky to start with. And that's when I talk about intuitiveness. I was trying to take the cursor back to split two words, to put a space in between, but I kept finding that it highlighted those two words together. So it jumped to a conclusion that I did not want to make. It would be good if you could highlight certain text, if you want to enlarge the print or make that stand out. That was one of the other things I noticed when you were looking at the screen. I mean the screen seemed to work quite well in the sun, but if you could highlight in some way, and maybe even put it in some temporary location where you could pull that back to jog your memory when you write comments. I think the highlighting feature could work.

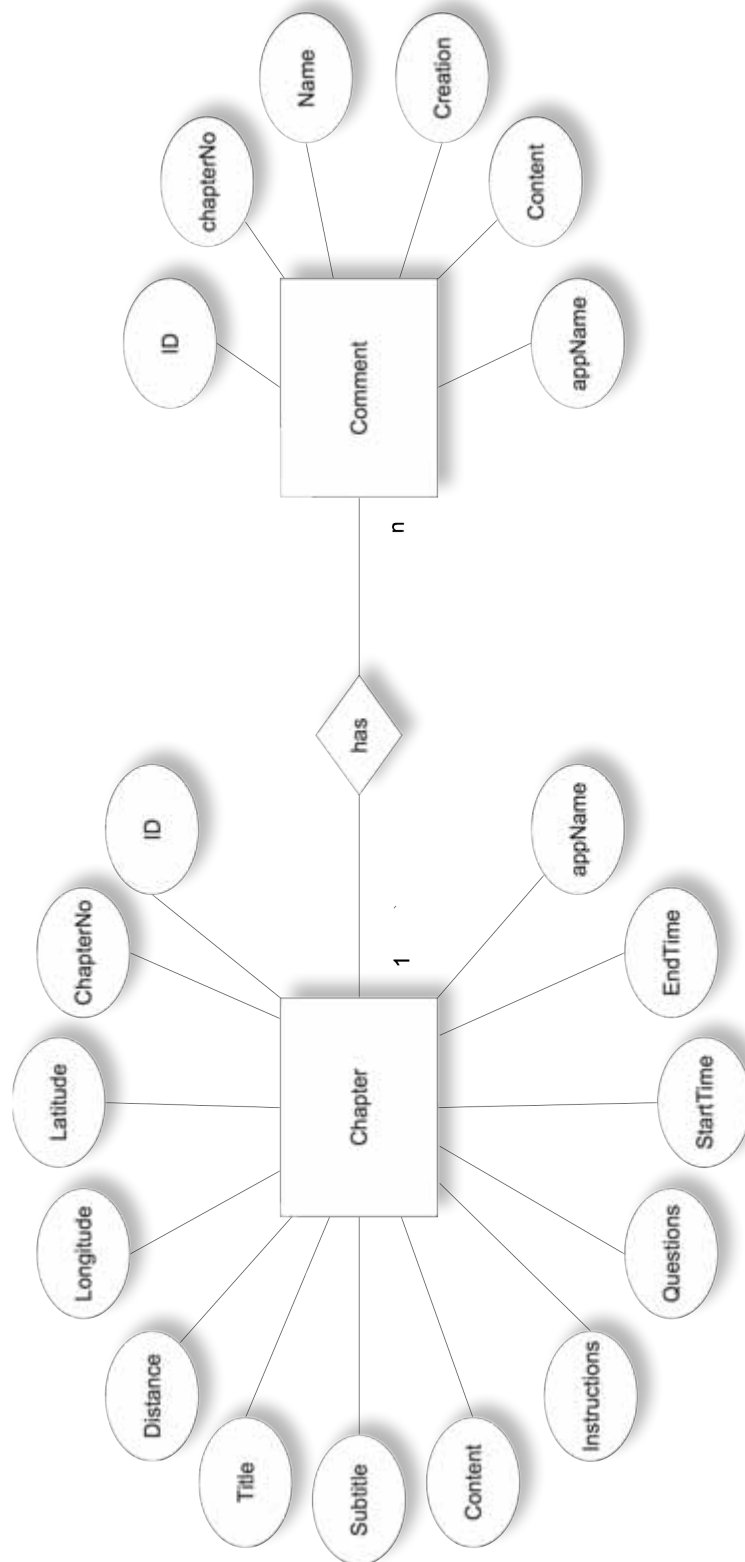
WELM – Participant 5 (Survey)

1. Please state if you agree with the following statements.
(1=I totally disagree, 5= I totally agree)

The requirement to go to the actual places in order to read about them was unnecessary and annoying.	<input type="checkbox"/> 1	<input checked="" type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
Being at the place with a relation to a story or an author was enhancing and exciting.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input checked="" type="checkbox"/> 5
Reading about a place and its history, while sitting in situ, makes it a lot more comprehensible and vivid.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input checked="" type="checkbox"/> 5
Changing the focus from reading on the screen to looking around to observe the environment is distracting.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input checked="" type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
There were no difficulties in switching between reading the story and examining the described place.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input checked="" type="checkbox"/> 4	<input type="checkbox"/> 5
Being able to comment only in situ positively influences the comments, as everything is still fresh in the mind.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input checked="" type="checkbox"/> 4	<input type="checkbox"/> 5
Being able to comment only in situ increased my motivation to submit and contribute immediately.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input checked="" type="checkbox"/> 4	<input type="checkbox"/> 5
The character limitation of the comments was unnecessary and annoying.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input checked="" type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
The character limitation of the comments relieved me of the burden of writing a long text.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input checked="" type="checkbox"/> 4	<input type="checkbox"/> 5
The character limitation strengthened the feeling that my comment met the expectations and was valuable.	<input type="checkbox"/> 1	<input checked="" type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
Writing on the go was cumbersome, and I would have preferred to submit comments later on.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input checked="" type="checkbox"/> 4	<input type="checkbox"/> 5

2. Do you have a mobile device (e.g. mobile phone, PDA)? ☒ Yes ☐ No
3. Do you use functions other than calling or texting on your mobile device (e.g. calendar, calculator)? ☒ Yes, I use the following: Calendar, Calculator, Pictures, Conversions, Internet ☐ No
4. Do you have an Internet enabled mobile device? ☒ Yes ☐ No
5. How often do you use your mobile device to request information from the Internet?
☐ Daily ☐ Several times per week
☐ 1-5 times per month ☒ Never, because of costs
6. How often do you read books or stories in your leisure time?
☐ Daily ☐ Several times per week
☒ 1-5 times per month ☐ Several times per year
☐ Never, because _____
7. Where do you read? (Multiple selections possible)
☒ At home
☐ Outdoors (e.g. at a beach /park): _____
☒ During travelling (e.g. in a bus/train): _____
8. How old are you? 49
9. What is your gender? ☒ Male ☐ Female
10. What is your profession / occupation? Self-employed

Appendix B Entity-Relationship Diagram



Appendix C Contents of the Attached CD

The attached CD contains the following folders and contents:

Author Interviews

- Interview guideline for author interviews
- Audio-recordings of the interviews
- Text transcripts of the interviews

Paper Prototyping

- Guidelines for paper prototyping session
- Photos of paper prototyping sessions
- Pictures of paper prototypes

Press

- Newsletter and video of Noosa District State High School
- Press release in Cooroy Rag

Publications

- Publications and presentations that formed part of this thesis

Source Code

- Server: Includes all source code for the web application
- Client: Includes the source code for the iPhone apps LiteraryTrail and LiteraryMap

Thesis

- Electronic versions of this thesis

User Studies

- User Study material for the four studies: KGU V I, CLMS, KGU V II, WELM
- Interview guidelines and surveys
- Photos of user study sessions
- Audio-recordings of the follow up interviews
- Text transcripts of the follow up interviews
- Utilized stories for the studies